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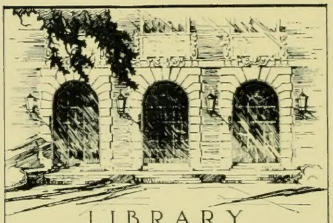

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ENGLISH BOTANY;

OR,

COLOURED FIGURES

OF

BRITISH PLANTS.

EDITED BY JOHN T. BOSWELL, F.L.S., ETC.,
LATE LECTURER ON BOTANY AT WESTMINSTER HOSPITAL.

THE POPULAR PORTION BY MRS. LANKESTER,
AUTHOR OF "WILD FLOWERS WORTH NOTICE," "THE BRITISH FERNS," ETC.

THE FIGURES BY
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JOHN EDWARD SOWERBY,
ILLUSTRATOR OF THE "FERNS OF GREAT BRITAIN," "GRASSES OF GREAT BRITAIN,"
"WILD FLOWERS WORTH NOTICE," ETC. ETC.

Third Edition.

ENLARGED, RE-ARRANGED ACCORDING TO THE NATURAL ORDERS,
AND ENTIRELY REVISED.
WITH DESCRIPTIONS OF ALL THE SPECIES BY THE EDITOR.

VOLUME IV.

LYTHRACEÆ TO DIPSACEÆ.

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1877.

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ENGLISH BOTANY.

ORDER XXVII.—LYTHRACEÆ.

Herbs, rarely trees or shrubs, with the branches generally 4-sided, and the leaves opposite or verticillate, rarely alternate, exstipulate, pinnately-veined, mostly entire, destitute of glands or dots. Flowers axillary, solitary or in glomerules or cymes, sometimes racemosely or spicately arranged, perfect, generally regular, commonly purple, but sometimes white, yellow, bluish, or red. Calyx sometimes coloured, free from the ovary, persistent, tubular or bell-shaped, rarely urceolate; the limb 3- to 14-toothed at the apex: when the divisions are more than 8, they are in 2 rows, those of the outer row differing in size and shape from those of the inner, being usually smaller; teeth valvate or distant in æstivation. Petals as many as the teeth of the calyx, or if there be two rows of the latter, as many as the inner teeth, inserted in the throat of the calyx, deciduous, obovate or oblong, often undulated at the margins, imbricated, rarely absent. Stamens as many, or twice or thrice as many as the petals, inserted in the upper part of the tube of the calyx; filaments distinct; anthers 2-celled, introrse. Ovary superior, free, sessile or shortly stipitate, 2- to 4-celled, with the placentæ in the axis, and containing numerous ovules; style terminal, simple, sometimes very short; stigma simple, obtuse or capitate, rarely 2-lobed. Capsule membranaceous, or rarely leathery, enclosed in the calyx-tube, but not adhering to it, often 1-celled by the obliteration of the dissepiments, dehiscing loculicidally, circumcissily, or irregularly. Seeds small and numerous, rarely few and large, without albumen; embryo orthotropous, with the cotyledons flattish, often foliaceous and with 2 auricles at the base.

GENUS I.—LYTHRUM. *Linn.*

Calyx cylindrical, with as many striæ as there are teeth, which are 8 to 12, in 2 rows, the alternate ones exterior and smaller than the others, rarely only 4 in 1 row. Corolla of 4 or 6 petals, which

are opposite the smaller teeth of the calyx. Stamens 2 to 12, inserted about the middle or near the base of the calyx. Style filiform; stigma capitate. Capsule included in the calyx-tube, ovoid or cylindrical, 2-celled, sometimes splitting irregularly, sometimes opening by 2 valves, in which case the placentæ are left combined. Seeds numerous, plano-convex, or angulated, with a leathery testa.

Annual or perennial herbs, rarely shrubby, with alternate, opposite, or verticillate entire leaves and axillary purple flowers.

The name of this genus of plants is supposed to be derived from the Greek word λυθρον (*luthron*), black blood, on account of the purple colour of the flowers.

SPECIES I.—LYTHRUM SALICARIA. *Linn.*

PLATE CCCCXCI.

Rootstock somewhat creeping. Stems erect, or erect from a decumbent base, with 4 or 6 slightly winged angles. Leaves opposite or in whorls of 3 or sometimes 4, sessile, semi-amplexicaul, oblong-lanceolate, subcordate at the base, acute at the apex. Flowers very shortly pedicellate, in false whorls formed by opposite subsessile axillary glomerules, which are 2- to 15-flowered and arranged in a terminal, usually leafy spike. Pedicels sometimes with 1 or 2 subulate bracteoles at the base, sometimes naked. Calyx pubescent, cylindrical, 12-nerved; the 6 inner teeth deltoid, 6 outer twice as long, and linear-lanceolate. Petals 6 to 8 times the length of the longer calyx-teeth. Stamens 12. Capsule ovoid.

In wet places. Common and generally distributed in England, and rather common in the west of Scotland, as far north as Argyleshire, but very local in the east, where I have only seen it at Loch Gelly, in Fifeshire, though it was noticed by Professor Graham by Loch Lubnaig, in Perthshire.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Stems tough, 2 to 5 feet high, usually much branched; branches ascending. Leaves entire, 2 to 6 inches long by ½ to 1 inch broad. Calyx about ¼ inch long, with the tube about 4 or 5 times as long as the teeth, cylindrical when in flower, ovate-cylindrical in fruit. Pedicels shorter than the calyx-tube, united into a common peduncle at the base, which, however, has scarcely any appreciable length. Flowers ¾ to 1 inch across, bright reddish-purple, with yellow or violet anthers. Petals oblong, elliptical, crumpled. Style exserted or

included. Fruit ovate-ovoid, about as long as the tube of the calyx, which entirely conceals it. Seeds very numerous, angular, pear-shaped, faintly wrinkled, striate. Plant dark dull-green, varying from nearly glabrous to densely pubescent. The calyx, upper part of the stem, and the margins of the leaves, however, almost always with short white hairs, those on the stem and calyx jointed.

A very variable plant, with the leaves at the base of the verticellasters sometimes scarcely exceeding the flowers, sometimes 2 to 4 times as long, almost always opposite, but sometimes in whorls of 3, or even alternate. According to Professor Boreau, when the main stem is broken over, it produces in autumn branches with few-flowered clusters in the axils of large alternate bracts, in which case it is L. alternifolium of Lorey.

Vaucher notices three kinds of flower on the same plant (Lecoq, Études, VI. 156) :—

"1st. Stigma prominent, anthers yellow.

"2nd. Stigma bent back, not exceeding the prominent stamens with violet anthers, but exceeding the short yellow anthers hidden at the bottom of the tube.

"3rd. Stigma rounded, with papillæ not exceeding even the short anthers, which, like the rest, are exserted out of the tube."

Purple Loosestrife.

French, *Salicaire Commune.* German, *Gemenier Weiderich.*

This plant is associated with many of our autumn walks, and abounds in ditches and marshy meadows. It has a reputation as a tonic and astringent, and has been used with success in diarrhœa in Ireland, where it is a common village remedy. A decoction of the dried plant, formed by boiling two ounces of it in a quart of water until reduced to a pint, and administered twice a day, is recommended by some practitioners.

SPECIES II.—LYTHRUM HYSSOPIFOLIA. *Linn.*

PLATE CCCCXCII.

L. hyssopifolium, *Sibth. Sm.* Eng. Bot. No. 292. *Hook. & Arn.* Brit. Fl. ed. viii. p. 148. *Benth.* Handbook Brit. Fl. p. 214.

Root annual. Rootstock none. Stem decumbent or procumbent, sub-cylindrical, with faintly elevated lines arising from the bases of the leaves. Leaves almost all alternate, sessile, not amplexicaul, strap-shaped, attenuated at the base, sub-acute at the apex. Flowers sub-sessile, solitary in the axils of the leaves. Pedicels with 2 small scarious bracts at the summit, embracing the bottom of the calyx-tube. Calyx glabrous, funnel-shaped in flower, cylindrical in fruit, 12-nerved, the 6 alternate ones fainter; 6 inner teeth deltoid, 6 outer twice as long, and linear-lanceolate. Petals twice

or thrice the length of the longer calyx-teeth. Stamens 6. Capsule cylindrical.

In places occasionally overflowed. Very rare. Near Rochester, Kent, several places in Cambridgeshire, "Cholsey," Berks (Soc. Bot. Ed.), and Wallingford, Oxford, are all the localities from whence I have specimens.

England. Annual. Late Summer and Autumn.

Stems 4 to 16 inches long, rather tough, simple or slightly branched at the base; branches spreading. Leaves $\frac{1}{2}$ to 1 inch long, by $\frac{1}{12}$ to $\frac{1}{8}$ inch wide. Calyx $\frac{1}{5}$ inch long, tube 4 or 5 times as long as the teeth, attenuated towards the base when in flower, but cylindrical in fruit. Pedicels much shorter than the calyx-tube, with the bracteoles at the apex instead of the base. Petals very small, oblong oblanceolate, pale purple. Stamens usually included, or very slightly exserted beyond the tube of the calyx. Fruit a little longer than the calyx-tube. Seeds very numerous, angular-ovoid, finely punctate-striate. Plant dull green, glabrous.

Hyssop-leaved Grass-poly.

French, *Salicaire à Feuilles d'Hyssope.* German, *Ysopblättriger Weiderich.*

GENUS II.—PEPLIS. *Linn.*

Calyx short, campanulate, 12-cleft, the 6 inner segments broadest and erect, the outer smaller, narrower, and somewhat spreading. Petals 6, opposite the exterior divisions of the calyx, very small, frequently absent. Stamens 6, inserted on the summit of the calyx-tube, and opposite the broader teeth. Style filiform, often very short; stigma capitate. Capsule partly protruding beyond the calyx-tube, sub-globose, with a very thin pericarp, splitting irregularly. Seeds numerous, plano-convex, with a leathery testa.

Small annuals, growing in wet places, with much-branched decumbent stems, and opposite, sessile, obovate, or oblanceolate entire leaves, and small solitary axillary flowers.

This genus is named from the Greek word πεπλις (*peplis*), a purple garment, which the flowers resemble in colour.

SPECIES I.—PEPLIS PORTULA. *Linn.*

PLATE CCCCXCIII.

Stem much branched, prostrate. Leaves opposite, obovate, attenuated into a short petiole. Flowers solitary, very shortly stalked, in the axils of the leaves. Pedicels with 2 small linear acute

bracteoles at the base. Calyx shortly bell-shaped, with 12 teeth; the 6 inner deltoid, the 6 outer generally longer, subulate, spreading. Style very short. Capsule subglobose, twice as long as the calyx-tube. Plant glabrous.

In wet places. Very common, and generally distributed throughout the kingdom.

England, Scotland, Ireland. Annual? Summer and Autumn.

Stems fragile, much branched, rooting at the base, creeping in mud or floating in shallow water, 2 inches to 1 foot long, bluntly quadrangular. Leaves $\frac{1}{2}$ to 1 inch long, broadly obovate, sometimes spathulate, most of them with flowers in their axils. Flowers at first sub-sessile, but at last with the stalk nearly as long as the calyx-tube, purplish. Calyx-tube $\frac{1}{16}$ inch long, not above twice as long as the inner teeth, with 12 faint ribs. Petals 6, pink, obovate, very caducous, sometimes absent. Stamens 6 to 12. Style with its length scarcely exceeding its diameter. Capsule about the size of a grain of sago. Seeds numerous, angular, finely punctate-striate. Plant quite glabrous, somewhat succulent, dull-green, generally tinged with purplish-red.

Water Purslane.

French, *Peplide Pourpier.* German, *Gemeine Bachburgel.*

ORDER XXVIII.—ONAGRACEÆ.

Herbs, more rarely shrubs, with opposite, alternate, or verticillate leaves, which are exstipulate, pinnately-veined, entire, toothed or pectinated, destitute of dots. Flowers axillary, arranged in racemes or spikes, perfect, generally regular, usually purple or yellow. Calyx sometimes coloured, tubular, with the tube united with the ovary; limb usually deciduous, commonly 4-, rarely 2-, 3-, 5-, or 6-partite, sometimes obsolete, valvate in æstivation. Petals usually 4, or as many as the lobes of the calyx, when the number of the latter varies from 4, inserted in the throat of the tube, deciduous, frequently emarginate or bifid, convolute or twisted, rarely absent. Stamens as many, or twice as many, as the lobes of the calyx, rarely only half as many, inserted with the petals; filaments distinct; anthers 2-celled, introrse. Ovary inferior, adnate with the calyx-tube, 4-, 2-, or rarely 1-celled; placentæ in the axis; ovules definite or

indefinite; style filiform; stigma 4-lobed or capitate, papillose or villose. Fruit a capsule, generally splitting loculicidally, more rarely septicidally or indehiscent, in which case it is either dry or succulent. Seeds indefinite or solitary in each cell, anatropous, without albumen, rarely albuminous; cotyledons often foliaceous, and with 2 auricles at the base.

Sub-Order I.—ŒNOTHERÆ.

Leaves opposite, alternate, or more rarely whorled, entire, toothed, or pinnatifid. Petals generally large, rarely absent. Ovary 4-, rarely 2-celled, with numerous (rarely solitary) ovules in each cell. Seeds ex-albuminous.

GENUS I.—EPILOBIUM. *Linn.*

Calyx-tube 4-sided, adnate to the ovary; limb 4-partite, splitting in a circumsessile manner and falling off after flowering. Petals 4. Stamens 8. Style filiform. Stigmas 4, spreading in the form of a cross, or connivent into a club. Capsule linear, tetragonal-cylindrical, 4-celled, opening from the apex by 4 recurving valves. Seeds numerous in each cell, crowned at the chalaza by a coma or tuft of silky hairs.

Herbs, rarely under-shrubs, with the lower leaves opposite, and the upper alternate, or more rarely all alternate, or in whorls of 3. Flowers axillary, towards the termination of the stem, or in terminal racemes or spikes. Corolla purple, rose-colour, flesh-colour, or nearly white.

The name of this genus of plants comes from the words επι (*epi*), upon, and λοβος (*lobos*), a pod, the flower looking as if it were seated on the top of a pod.

Section I.—CHAMÆNERION. *Tausch.*

Flowers irregular, rotate. Limb of the calyx divided to the base. Petals entire or very slightly emarginate, the lower pair a little smaller and wider apart than the upper 2. Stamens and style more or less declinate. Leaves all alternate.

SPECIES I.—EPILOBIUM ROSMARINIFOLIUM. *Hänecke.*

PLATE CCCCXCIV.

E. Dodonæi, *Vill.* Hist. des Pl. de Dauphiné, Vol. III. p. 507 (in part). *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 264. *Garcke*, Fl. von Nord und Mit. Deutsch. ed. vi. p. 142.

E. angustifolium, *Lam.* Dict. Vol. II. p. 370.

E. angustissimum, *Bertol.* Fl. Ital. Vol. IV. p. 292.

Stolons subterranean, short, thick, purplish. Stem ascending or erect, branched or simple, round. Leaves crowded, alternate, with fascicles of smaller ones in their axils, strap-shaped, attenuated at each end, entire or faintly and remotely denticulate, with no perceptible veins except the midrib. Flowers few, in a terminal corymbose raceme, lengthening into a lax raceme when in fruit. Pedicels each with a leaf-like bract a little way above the base; bracts longer than the pedicels. Petals regularly elliptical-oval, without a distinct claw. Style slightly bent down, and pubescent at the base. Stigmas spreading or slightly recurved. Plant nearly glabrous.

In stony places. In Glen Tilt, and by the banks of the Tay; but it has only been collected by Mr. J. Robertson.

Scotland. Perennial. Late Summer and Autumn.

Rootstock creeping. Stems tough, 1 to 2 feet high, frequently slightly branched. Leaves densely crowded, 1 to 2 inches long, with fascicles of others about half that length in the axils. Flowers 3 to 12, $1\frac{1}{4}$ inch across, purplish rose. Calyx-tube about $\frac{1}{2}$ inch long, thickly clothed with short white hairs; calyx-segments strap-shaped, dull purple. Pod, when mature, 2 to 3 inches long. Seeds oblong-ovoid, rounded at the top, slightly pointed below, faintly tuberculate. Stem and young leaves with short applied hairs.

I have only seen a few fragmentary specimens from the banks of the Tay in Mr. Borrer's herbarium.

Rosemary-leaved French-Willow.

French, *Épilobe à Feuilles de Romarin.* German, *Rosmarinblättriger Schotenweiderich.*

SPECIES II.—EPILOBIUM ANGUSTIFOLIUM. *Linn.*

PLATES CCCCXCV. CCCCXCVI.

E. spicatum, *Lam.* Dict. Vol. II. p. 373. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 583.

Stolons subterranean, elongated, thick, whitish. Stem erect, branched or simple, round. Leaves crowded, alternate, narrowly strapshaped-lanceolate, or strapshaped-elliptical, attenuated at each

end, entire or faintly and remotely denticulate, glaucous beneath, with the lateral veins as well as the midrib conspicuous. Flowers numerous, in a terminal, elongated, compact spike-like raceme. Pedicels from the axils of leaf-like bracts, the upper bracts strap-shaped, and scarcely exceeding the pedicels. Petals obovate or spathulate, contracted into an evident claw. Style bent down. Stigmas recurved or revolute. Plant glabrous, except the upper part of the rachis, pedicels, and calyx-tube.

Var. α, *macrocarpum.*

PLATE CCCCXCV.

E. macrocarpum, *Steph.*, *Leighton*, Ann. Nat. Hist. Ser. I. Vol. VIII. p. 247.
E. angustifolium, "*Linn.*" *Leighton*, Ann. Nat. Hist. Ser. I. Vol. VIII. p. 403 (*Linn.* Herb. ?)
E. angustifolium, var. β, *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 142.
E. spicatum, *Lam.* Dict. Vol. II. p. 373. *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 583.

Rootstock with short subterranean stolons. Leaves narrowly lanceolate-elliptical, attenuated towards the base, acuminate at the apex. Flower-buds oblong-obovate-ovoid, nearly regular, shortly acuminate at the apex. Petals obovate, gradually contracted into a short claw, entire at the apex. Pistil about as long as the stamens. Mature capsules erect, 3 or 4 times as long as the pedicel, cylindrical, with 4 blunt angles.

Var. β, *brachycarpum.*

PLATE CCCCXCVI.

E. brachycarpum, *Leighton*, Ann. Nat. Hist. Ser. I. Vol. VIII. p. 403.
E. angustifolium, *Leighton*, Ann. Nat. Hist. Ser. I. Vol. VIII. p. 247. "*Bertol.* Fl. Ital. Vol. IV. p. 291" (*Leight.*)
E. angustifolium, var. α, *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 142.
E. spicatum, β latum, *Ser.* in *D. C.* Prod. Vol. III. p. 40.

Rootstock with long subterranean stolons. Leaves lanceolate-strapshaped, rounded or abruptly narrowed towards the base, acuminate at the apex. Flower-buds obovate-ovoid, bulging greatly on the outer side, nearly straight on the top, suddenly acuminated into a short point on the upper side. Petals spathulate, with a sub-orbicular lamina suddenly contracted into a short claw, often slightly emarginate at the apex. Pistil about ¼ longer than the stamens. Mature capsules spreading-ascending, not more than twice as long as the pedicel, tetragonal-cylindrical, attenuated at each end.

Var. α in borders of woods, damp places and on rocks. Sparingly, but generally distributed from Somerset and Hants to Orkney.

Var. β in damp woods and by river-sides. Much rarer than var. α, and probably either planted or escaped from cultivation. It occurs in several places in Shropshire; in North Wales; Hampshire; by the banks of the Swale, Richmond, Yorkshire; Collinton Woods, near Edinburgh, the latter being the only place in which I have seen it growing, except in gardens, where it is very commonly cultivated under the name of French-Willow or Rose-Bay.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Var. α with the rootstock emitting numerous thick rather short stolons. Stem erect, 1 to 4 feet high, roundish, smooth, simple or branched. Leaves 2 to 6 inches long, alternate, crowded, entire with callous denticulations, glaucous beneath with the veins conspicuously reticulated. Flowers about 1 inch across, very numerous, in long compact racemes; the lower ones from the axils of bracts resembling the leaves, the upper from small linear leafy bracts. Pistils with a few hairs at the base, at first shorter than the stamens, at length a little exceeding them; stigmas 4-partite, with the segments at first erect, afterwards revolute. Pedicels ascending, shorter than the calyx-tube, which is slightly curved outwards, and about ½ inch long. Sepals strap-shaped, acuminate, free to the base, dull dark purple. Petals deep purplish-rose, the lower ones narrower than the others, and further apart. Capsule 1½ to 3 inches long, curved and spreading when young, afterwards straight and nearly erect. Seeds fusiform-clavate, faintly tubercled.

I have had great hesitation in reducing var. β to the rank of a variety, but the characters by which it is distinguished from var. α are such as might be caused by cultivation. Thus the looser soil of a garden would permit it to run more extensively at the root; this again would tend to produce imperfect seeding, which would account for the shorter pods. Indeed, it has been said that var. β never produces perfect seeds; but I have frequently found them full-grown, though I have not tested their capability of germination. The breadth of the lamina of the petals varies much even in the wild plant, and the form of the buds appears to depend on the petals, so that these two characters can only be considered as one. Var. β, however, appears to be always a taller and stouter plant, the stems being 3 to 6 feet high, and the leaves are broadest near the base, and taper from thence towards the apex.

Whether it be the effect of cultivation or not, the characters remain constant when the conditions of growth of the two forms are reversed. Var. β has grown in Collinton Woods for a very long time, but it still retains all the characters of the garden plant;

while, on the other hand, no one seems to have produced the garden form from var. α. The flowers of var. β are rather paler, and considerably larger than in var. α; the pods 1 to 1½ inch long; seeds with a tuft of pure white hairs.

Wild French-Willow, Rose-Bay.

French, *Épilobe en Épi.* German, *Schmalblättriger Schotenweiderich.*

The pretty purplish-red, or we may say Magenta-coloured flowers of this plant are known to all who own a piece of garden-ground, and some may have discovered that, showy and pleasing as are the blossoms, it is troublesome in a garden, as it spreads very rapidly, and is difficult to extirpate. In its native situations it is very beautiful; its willow-like leaves and bright flowers adorn many a wayside bank and inaccessible crag in the summer months of the year. Every piece of the running root will grow, and being very brittle, it is easily distributed accidentally, while the downy seeds are often drifted for miles by the wind. The cottony fibres which surround the seeds have given rise to many suggestions as to their use in the arts, and some experiments have been tried with them; but it is found that they are too short and brittle to be of any real value, although Withering tells us that they have been used mixed with cotton or fur and woven into stockings and other articles. The Willow-herb is one of the plants whose leaves are found in English adulterations of tea. The leaves form a wholesome vegetable when boiled, and the young shoots or suckers are a substitute for asparagus. The Kamtchatkans make a kind of beer from the young shoots and the pith, which they drink with the juice of *Agaricus muscarius* for the purpose of intoxication. Vinegar is also made by fermenting this beer.

Section II.—LYSIMACHION. *Tausch.*

Flowers regular, funnel-shaped. Limb of the calyx with the segments united for a short distance at the base. Petals obcordate, all similar and equidistant. Stamens and styles erect. Lower leaves opposite or in whorls of 3, but a greater or less number of the upper ones alternate.

Species III.—EPILOBIUM HIRSUTUM. *Linn.*

Plate CCCCXCVII.

Stolons subterranean, appearing in summer, and then thick, fleshy, with the leaves represented by opposite distant white fleshy scales. Stem erect, branched, round, without evident raised lines, pilose. Leaves on the stem and branches nearly all opposite, sessile, oblong-lanceolate, rounded and semi-amplexicaul at the base with the auricles adhering to the stem, finely and remotely serrate. Bracts alternate, resembling the leaves. Flowers very numerous, in racemes which terminate the stem and branches. Calyx-segments oblong, acute. Petals nearly as broad as long, twice as long as the calyx-segments. Stigma 4-partite, with the

segments revolute. Pod clothed with short spreading articulated hairs. Seeds oblong-ovoid, acute at the base, clothed with small sharp tubercles. Plant more or less thickly clothed with glandular pubescence.

In wet places, by the sides of streams, ditches, and ponds. Rather common, and generally distributed throughout England and the South of Scotland, but rare North of the Forth and Clyde, though it occurs in some places in Forfarshire, and has been reported from Moray.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem erect from the base, 3 to 5 feet high, emitting below the surface of the ground, and close above it, numerous stolons about as thick as a quill, those which spring from above the ground bending downwards, and burying themselves close to the stem. Leaves with the base semi-amplexicaul and very shortly decurrent; the margins with remote slender unequal incurved teeth with callous points. Flowers in lax racemes, often combined so as to form an irregular panicle, deep purplish-rose, $\frac{3}{4}$ to 1 inch across, much more open than in any of the following species. Petals inversely deltoid-roundish, notched at the apex, whitish at the base. Stamens attached to a disc which lines the interior of the base of the calyx-tube, the outer row twice as long as the inner, each filament with a tuft of whitish hair within it. Style longer than the longest stamens; stigmas spreading in the form of a cross, at length revolute, finely papillose within. Mature pods $2\frac{1}{4}$ to 3 inches long. Seeds brownish, with a broad shallow furrow on the inner side, crowned by a tuft of long pure white hairs. Plant entirely and thickly clothed with short articulated glandular pubescence, and in addition more or less pilose with long white hairs, —sometimes so numerous as to give the plant a silky appearance,— sometimes so distant that it appears sub-glabrous except on the stem.

Great hairy Willow-herb.

French, *Épilobe Hérissé.* German, *Rauhhaariger Schotenweiderich.*

This plant is vulgarly known by the name of Codlins-and-Cream, from the fragrance of its flowers, which is, however, very transitory, and lasts but a few minutes after it is gathered; it is supposed, however, to smell like stewed codlins. We have often heard it called Apple-pie.

SPECIES IV.—**EPILOBIUM PARVIFLORUM.** *Schreb.*

PLATE CCCCXCVIII.

Stolons first produced in late autumn, appearing above ground and bearing shortly-stalked or sub-sessile rosettes of reddish or

green leaves. Stem erect, simple or branched, round, without evident raised lines, pilose. Leaves at the base of the stem opposite, those above the middle generally alternate, sessile, the upper ones not at all amplexicaul or decurrent, oblong-lanceolate, rounded at the base, remotely and finely callously denticulate. Bracts alternate, resembling the leaves. Flowers numerous. Calyx-segments oblong, acute but not apiculate. Petals longer than broad, about one-half longer than the calyx-segments. Stigma 4-partite, with the segments spreading but not revolute. Pod clothed with very short articulated hairs. Seeds oblanceolate-ovoid, rounded at both ends, finely tubercular. Plant pilose with its pubescence glandular above, or sub-glabrous.

In wet places, by the sides of ditches, streams, and ponds. Common, and generally distributed throughout the kingdom, extending further North than the preceding.

England, Scotland, Ireland. Perennial. Summer and Autumn.

This species was supposed by Linnæus to be merely a variety of E. hirsutum, but it is a much smaller plant, 1 to 3 feet high, with the leaves rarely above 2 inches long, more ascending, sometimes many of them alternate, the upper ones not at all amplexicaul or decurrent, more variable in shape (from strap-shaped to broadly lanceolate), though generally having more or less of an oblong form; the flowers much smaller, $\frac{3}{8}$ inch across, pale purplish-rose; the style not exceeding the stamens, the stigmas not revolute; the pilose hairs shorter and more woolly; and it may be readily known from E. hirsutum by the absence of the thick fleshy white stolons.

The sub-glabrous state, E. rivulare of Wahlenberg, occurs occasionally; but all intermediate forms between it and the ordinary hairy form are to be found, and it seems scarcely separable even as a variety. When most of the leaves are alternate it is E. intermedium of Mérat.

Small-flowered hairy Willow-herb.

French, *Épilobe à Petites Fleurs.* German, *Kleinblättiger Schotenweiderich.*

SPECIES V.—EPILOBIUM MONTANUM. *Linn.*

PLATE CCCCXCIX.

Stolons first produced late in autumn; when subterranean short, with fleshy white and pink imbricated scales; when appearing above ground bearing sub-sessile rosettes of green leaves. Stem

erect, simple or slightly branched, round, without evident raised lines, sparingly clothed with very short incurved hairs. Leaves mostly opposite, very shortly stalked, with the petioles slightly winged with the wings connate, varying from ovate to lanceolate, rounded at the base, acute at the apex, sharply and irregularly serrate or dentate-serrate. Bracts alternate, resembling the leaves. Flowers numerous, slightly drooping before expansion. Calyx-segments oblong-lanceolate, somewhat obtuse. Petals longer than broad, nearly once and a half to twice as long as the calyx-segments. Stigma 4-partite, with the segments spreading but not revolute. Pod clothed with short incurved hairs. Seeds oblanceolate-ovoid, rounded above, blunt below, finely tubercular. Plant sub-glabrous, except the stem, pedicels, and pods, and occasionally also the veins and margins of the leaves, which are hairy.

In hedge-banks, woods, on old walls, &c. Common, and generally distributed, reaching as far North as Orkney and Shetland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Very variable in size, but generally 1 to 2 feet high, but in mountainous districts sometimes only as many inches. Leaves generally $1\frac{1}{2}$ to 3 inches long, deep green, with the veins deeply lined on the upper surface, and very prominent beneath, the petioles not above $\frac{1}{4}$ inch long, those of the opposite leaves joined together so as to form an elevated transverse line. Flowers $\frac{1}{4}$ to $\frac{3}{8}$ inch across, pale lilac-rose. Style shorter than the longer stamens; stigmas very strongly papillose. Mature pods 2 to 3 inches long. Plant deep green, frequently tinged with red, the stem and calyx almost always so on the side next the sun. The leaves vary from quite glabrous to hairy on the veins, or with short scattered hairs all over the surface as well as on the veins; they are generally all opposite, except those which have flowers in the axil, rarely many of them alternate, and sometimes they are in whorls of three, an arrangement which takes place accidentally in many of the species.

When this plant produces the stolons below ground they are short, thick, and fleshy; it is then the E. sylvaticum of Boreau; frequently, however, they appear only above or close to the point where the stem emerges from the ground, and then produce rosettes of green leaves from the first.

E. collinum (Gmel.) appears to be a small form, with the leaves more distinctly stalked, and the stem often much branched, but of this I have not seen British examples.

Broad-leaved Willow-herb.

French, *Épilobe de Montagne.* German, *Berg Schotenweiderich.*

SPECIES VI.—EPILOBIUM LANCEOLATUM. *Sebast. & Maur.*

PLATE D.

E. roseum, var. *Benth.* Handbook Brit. Fl. p. 208.

Stolons first produced late in autumn, appearing above ground and bearing sub-sessile rosettes of green leaves. Stem erect, simple or slightly branched, with 4 indistinct raised lines, clothed with short incurved hairs. Lower leaves approximate, opposite; upper ones or not unfrequently all alternate; all shortly stalked, with the margins of the petioles decurrent, so as to form faint raised lines on the stem, oblong- or strapshaped-elliptical, wedge-shaped at the base, obtuse at the apex, regularly and rather remotely dentate-serrate. Bracts alternate, resembling the leaves. Flowers numerous, slightly drooping before expansion. Calyx-segments lanceolate, acute. Petals longer than broad, half as long again as the calyx-segments. Stigma 4-partite with the segments spreading. Pod clothed with short incurved hairs. Seeds oblanceolate-oblong-ovoid, rounded above, somewhat acute below, finely tuberculate. Plant subglabrous except the stem (especially the upper part of it), pods, calyces, and veins and margins of the leaves, which are hairy.

By road-sides and in dry waste places. Rare. Near Plymouth, Devon; Stapleton and Hanham, Bristol; and at Tintern, Monmouthshire; formerly also at Long Ditton, Surrey.

England. Perennial. Summer and Autumn.

Stem 1 to 3 feet high. Leaves $1\frac{1}{2}$ to 2 inches long, with the petioles longer in proportion than in E. montanum, with the sides more parallel, the margins more equally serrate, with the base entire for a greater distance; the calyx-tube is longer when in flower, and has the segments much more acute; the flowers are scarcely so large, deeper rose; and in winter the rosettes have the leaves spreading, not erect, as those of E. montanum. The leaves are of a greyish-green, but have frequently the red tinge which occurs also in E. montanum, and the stem and one side of the calyx are almost always tinged with purplish-red.

The lines on the stem of this species are sometimes very indistinct.

Spear-leaved Willow-herb.

German, *Lanzettlicher Schotenweiderich.*

SPECIES VII.—EPILOBIUM ROSEUM. *Schreb.*

PLATE DI.

Stolons produced late in autumn, appearing above ground bearing lax rosettes of green leaves. Stem erect, simple or slightly branched, with 2 or 4 rather conspicuous raised lines, glabrous below, clothed with short curled hairs at the summit. Leaves shiny, the lower ones distant, opposite, the upper ones (or sometimes all) alternate, all conspicuously stalked, with the margins of the petioles decurrent so as to form raised lines on the stem, elliptical, oval-elliptical, or lanceolate-elliptical, attenuated both at the base and the apex, the latter acute, finely denticulate-serrate. Bracts alternate, resembling the leaves. Buds apiculate. Flowers rather numerous, slightly drooping before expansion. Calyx-segments lanceolate-acute. Petals about one-fourth longer than the calyx-segments. Stigma club-shaped. Pods clothed with short curled hairs. Seeds oblanceolate-oblong-ovoid, rounded above, rather obtuse below, very finely tuberculate. Plant nearly glabrous, except the upper part of the stem, calyces, and occasionally the veins of the leaves, which are hairy.

In damp places, and a weed in cultivated ground. Probably not uncommon in the South of England, but no doubt sometimes passed over as E. montanum. In Scotland it has been reported from Moray, Forfarshire, and Fife.

England, Scotland? Ireland. Perennial. Summer and Autumn.

Stem 1 to 2 feet high, more fragile than in any of the preceding plants, and with at least 2 conspicuous raised lines, and frequently 2 indistinct ones. Leaves few, more evidently stalked and more flaccid. Flowers much smaller, not above $\frac{1}{6}$th inch across and often less, whitish with rose-coloured streaks; the buds are also abruptly cuspidate at the apex. The winter rosettes of leaves are more lax, and the whole plant is more glabrous than in any of the preceding species.

Small-flowered smooth Willow-herb.

French, *Épilobe Rose.* German, *Rosenrother Schotenweiderich.*

SPECIES VIII.—EPILOBIUM TETRAGONUM. *Linn.?*

PLATE DII.

Bab. Ann. Nat. Hist. Ser. II. Vol. XVII. p. 240.
E. adnatum, *Griesb.* in Bot. Zeit. 1852, p. 854.

Stolons produced late in autumn, appearing above ground bearing lax rosettes of green leaves. Stem erect, usually branched, with 2 or 4 very conspicuous raised lines, glabrous below, clothed with curled hairs above. Leaves shining, the lower ones opposite, the upper ones often and the middle ones sometimes alternate, sessile or sub-sessile, decurrent, strap-shaped or the upper ones strap-shaped-lanceolate, gradually narrowed at the base, which is gradually contracted into the decurrent lines on the stem, slightly narrowed at the apex, strongly and irregularly denticulate-serrate; midrib and lateral veins depressed on the upper surface, prominent on the lower. Bracts alternate, resembling the leaves. Buds acute. Flowers numerous, erect before expansion. Calyx-segments narrowly triangular-lanceolate, acute. Petals a quarter to half as long again as the calyx-segments. Stigma club-shaped. Pods very long, slightly curved inwards, clothed with short curled hairs. Seeds obovate-ovoid, rounded above, obliquely sub-acute below, roughened with minute tubercles. Plant glabrous except the upper part of the stem, calyces, margins, and occasionally the veins of the upper leaves.

By the sides of ditches, on damp hedge-banks, and in open places in woods. Apparently rather rare. I have seen it from the Isle of Wight; Reigate and Claygate, Surrey; Foots Cray, Sydenham, and Shooter's Hill, Kent; and Professor Babington states that he has it from Sidmouth, Devon; Sussex; Stapleton, Gloucestershire; Congeston, Leicestershire; Cambridge; and Glen Falloch, Perthshire. It appears to be common in Essex, according to Mr. Gibson's Flora of that county. In Scotland it must be very local or rare, as I have never met with it.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem 1 to 2 feet high, slender, rather tough. Leaves 1 to 3 inches long, with the sides sub-parallel, having a shiny appearance as if greased. Flowers small, pale-lilac, about $\frac{1}{4}$ inch across. Pedicels rather long, frequently 1 inch or more when mature. Pods very long in proportion to the size of the plant, $2\frac{1}{2}$ to $3\frac{1}{2}$ inches. Seeds rather short, dark brown, with the coma adhering

more firmly to the seed than in the three preceding species. Plant pale-green, usually nearly glabrous, though sometimes the hairs on the upper part of the stem, pods, calyx-segments, veins and margins of the leaves are abundant.

E. Lamyii, *F. Schultz*, appears to belong to this species; it has all the leaves narrowed into a very short petiole at the base, while in the normal form the leaves on the middle of the stem are sessile.

No doubt Linnæus included all the Epilobia with raised lines on the stem under his E. tetragonum. In his Herbarium E. roseum represents his E. tetragonum.

Long-podded square-stalked Willow-herb.

French, *Épilobe Tétragone.* German, *Vierkantiger Schotenweiderich.*

SPECIES IX.—EPILOBIUM OBSCURUM. *Schreb.*

PLATE DIII.

Bab. Ann. Nat. Hist. Ser. II. Vol. XVII. p. 242.
E. virgatum, *Gr. & Godr.* Fl. de Fr. Vol. I. p. 578.
E. tetragonum, var. *Benth.* Handbook Brit. Fl. p. 208. *Hook. & Arn.* Brit. Fl. ed. viii. p. 144.

Stolons produced in late summer, partly subterranean, short or elongated, rather slender, with a few more or less distant pairs of small obovate leaves not forming a rosette. Stem erect, usually from a curved base, simple or branched, with 2 or 4 conspicuous raised lines, glabrous below, clothed with curled hairs above. Leaves dim, the lower ones opposite, the upper ones often and the middle ones sometimes alternate, sessile or subsessile, decurrent, lanceolate or the lower ones oblong, rounded at the base which is suddenly contracted into the decurrent portion, tapering to and generally blunt at the apex, faintly and irregularly denticulate or denticulate-serrate, midrib only deeply depressed on the upper surface and prominent on the under. Bracts alternate, resembling the leaves. Buds acute. Flowers numerous, erect before expansion. Calyx-segments narrowly triangular-lanceolate, acute. Petals a quarter to half as long again as the calyx-segments. Stigma club-shaped. Pods moderately long, straight except near the base where they join the pedicel, clothed with short curled hairs. Seeds obovate-ovoid, rounded above, obliquely sub-acute below, roughened with minute tubercles. Plant glabrous except the upper part of the stem, calyces, margins and sometimes the veins of the leaves.

By the sides of ditches and streams, and in swamps. Probably

common. I have specimens from Sussex, Kent, Surrey, Middlesex, Gloucester, Derby, York, and from Edinburgh, Clackmannanshire, Kincardineshire, and Forfarshire; and as Professor Babington adds Devon, Warwickshire, and Monmouthshire, there can be little doubt that it is generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

This plant is generally confounded with E. tetragonum, but the stolons are produced earlier and are more elongated, especially when growing in wet places. The leaves are shorter, more erect, broader at the base, and tapering from a little above it to the apex, instead of having the sides parallel for a considerable distance; they are more flaccid, without any of the shiny almost greasy appearance of those of E. tetragonum; they have the veins far less impressed above, particularly in the broader-leaved forms; the margins are less strongly and more remotely denticulate; the flowers rather deeper in colour; the pedicels and pods shorter, the latter 2 to $2\frac{1}{4}$ inches long and curved upwards where they join the pedicel, so as to be parallel with the stem for the greater portion of their length. The seeds are similar, but longer in proportion to their breadth; the plant is of a deeper green colour, often reddish late in the season; and when it has elongated stolons, the plants produced from them in the succeeding year have the stem curved at the base, though this is scarcely observable in those plants which have short stolons and grow in drier ground.

Short-podded square-stalked Willow-herb.

French, *Épilobe Obscur.* German, *Dunkelgrüner Schotenweiderich.*

SPECIES X.—EPILOBIUM PALUSTRE. *Linn.*

PLATE DIV.

Stolons produced in summer, subterranean, reddish or yellowish, thread-like, with remote pairs of yellowish scale-like leaves; in autumn terminated by a cone-like scaly bud of thick imbricated yellowish leaves. Stem erect, curved at the base, simple or branched, round, without elevated lines, more or less thickly clothed with curled hairs. Leaves rather dim, mostly opposite, sessile or subsessile, not decurrent, lanceolate or linear-lanceolate, wedge-shaped at the base, which is sometimes gradually contracted into a very short petiole in the uppermost leaves, tapering to and generally acute at the apex, entire, or very faintly callously denticulate; midrib only impressed on the upper surface and prominent beneath. Bracts alternate, resembling the leaves. Buds obtuse. Flowers numerous

or few, slightly drooping. Calyx-segments narrowly triangular-lanceolate, acute. Petals a quarter to half as long again as the calyx-segments. Stigma club-shaped. Pods moderately long, clothed with curled hairs. Seeds elongate-clavate, with the testa produced at the top into a small scale-like tubercle on which the coma is placed, attenuate and acute below, very finely roughened with minute points. Plant sub-glabrous, or with the stem, calyces, margins, and midribs of the leaves clothed with short curled hairs.

In wet places and in bogs. Common, and apparently generally distributed from Cornwall to Orkney and Shetland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem generally 1 to 2 feet high. Stolons at first extremely slender, with the leaves remote, but later in the year shorter, with the pairs of small scale-like leaves larger, and in autumn those most deeply buried with a large inversely-conical bud with thick fleshy imbricated scales, which at length becomes detached, and next year grows into a separate plant. Leaves generally more flaccid than in the two last plants, so that they commonly hang down a little, very variable in size and breadth, usually entire. Buds at first erect, then hanging over almost horizontally, in which position the flower expands, after which the pod becomes erect. Pods 2 to $2\frac{1}{2}$ inches long. Seeds very different from any of the preceding, being longer and narrower, and with the seed-coat extended beyond the nucleus into a scale-like neck forming a continuation of the inner face of the seed, upon which the coma is situated; they are also of a much lighter colour than in E. obscurum, which resembles this species in habit.

Mr. J. G. Baker has described, under the name of E. ligulatum, a plant from Gormire, N.E. Yorkshire. Of this I have received numerous specimens, which I have no hesitation in referring to E. palustre.

Narrow-leaved marsh Willow-herb.

French, *Épilobe des Marais.* German, *Sumpf Schotenweiderich.*

SPECIES XI.—EPILOBIUM ALSINIFOLIUM. *Vill.*

PLATE DV.

Bab. Ann. Nat. Hist. Ser. II. Vol. XVII. p. 313.

E. origanifolium, *Lam.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 267. *Fries*, Sum. Veg. Scand. p. 41.

Stolons produced in summer, subterranean, yellowish, thread-like, with remote pairs of yellowish scale-like leaves; in autumn with the scales much thickened and the terminal ones approximate, forming

an ovoid bud. Stem decumbent at the base, then ascending, simple or branched, with 2 (rarely 4) raised hairy lines, otherwise sub-glabrous, except towards the top, where there are scattered curled hairs. Leaves shining, mostly opposite, very shortly stalked, ovate or ovate-lanceolate, rounded at the base, and all below the rounded portion gradually contracted into a short petiole, tapering to and acute or acuminate at the apex, faintly and remotely serrate-denticulate, or callously denticulate. Bracts opposite or alternate, crowded together at the top of the stem. Buds obtuse, apiculate. Flowers few, crowded at the top of the stem, drooping until after expansion. Calyx-segments oblong, obtuse, apiculate. Petals from half as long again, to twice as long as the calyx-segments. Stigma club-shaped. Pods rather long, sub-glabrous. Seeds elongate-clavate with the testa produced at the top into a small scale-like tubercle on which the coma is placed, attenuate and acute below, very finely roughened with minute points. Plant sub-glabrous.

In shallow slow-running streams and "well-eyes" in alpine districts, where it is not uncommon. In Carmarthenshire, Yorkshire, Northumberland, the Lake District, and on almost all the high hills in Scotland.

England, Scotland. Perennial. Summer and Autumn.

Stems thick, brittle, flexuous, 3 inches to 1 foot long, growing in dense masses like those of Montia fontana var. rivularis, chiefly in the "well-eyes" and half-choked ditch-like sources of Highland "burns." Stolons somewhat resembling those of E. palustre, but thicker, passing gradually into leafy branches when growing from the stem above the mud. Leaves 1 to 2 inches long, rather thick but flaccid, and having a shining greasy appearance on the surface, broader in proportion to their length than many of the species, except E. montanum, rounded at the base and then attenuated into a very short winged petiole, the edges of which are generally but not always decurrent, as they sometimes meet across the stem, as in E. montanum—but even in this case there is usually a hairy strip running down the stem from the middle of the transverse line. Flowers large for the size of the plant, $\frac{3}{8}$ inch across, purplish-rose, rarely exceeding 4 or 5 in number and usually fewer. Fruit-pedicels $\frac{1}{2}$ to 1 inch long. Pods $1\frac{1}{2}$ to 2 inches, with much fewer hairs on them than in any of the preceding. Seeds very similar to those of E. palustre, but with the scale-like projection of the testa slightly tapering upwards, instead of suddenly contracted above the seed and then with the sides sub-parallel as in that species.

The figure in Engl. Bot. No. 2090, certainly does not represent E. alsinifolium. It seems to me to be a broad-leaved form of

E. obscurum, but possibly it may have been taken partly from E. obscurum and partly from the small mountain state of E. montanum. A new plate has been drawn from a Braemar specimen, sent by Mr. C. Bailey expressly for the present edition.

Chickweed-leaved Willow-herb.

German, *Dostenblättriger Schotenweiderich.*

SPECIES (?) XII.—EPILOBIUM ANAGALLIDIFOLIUM.

Lam.

PLATE DVI.

Bab. Ann. Nat. Hist. Ser. II. Vol. XVII. p. 312.

E. alpinum, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 268. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 577.

E. alpinum, var. *Hook. & Arn.* Brit. Fl. ed. viii. p. 144. *Benth.* Handbook Brit. Fl. p. 209.

Stolons produced in summer, appearing above the ground, elongated, slender, with distant pairs of obovate green leaves. Stem ascending or erect, generally decumbent at the base, simple or with a few branches below, with 2 hairy lines, otherwise sub-glabrous. Leaves mostly opposite, shortly stalked, lanceolate or elliptical-lanceolate, gradually attenuated at the base into the petiole, tapering to and blunt at the apex, faintly and very remotely callously-denticulate. Bracts opposite or rarely alternate, crowded together at the top of the stem. Buds obtuse. Flowers solitary, or if 2 or 3 together crowded at the top of the stem, drooping until after expansion. Calyx-segments oblong-obtuse. Petals about a quarter as long again as the calyx-segments. Pod sub-glabrous, on a very long pedicel when fully ripe. Seeds obovate-ovoid, testa scarcely produced beyond the nucleus of the seed (there being only a slight raised rim over the top of the seed on the inner side), attenuated and acute below, very faintly roughened with almost imperceptible tubercles. Plant sub-glabrous, rarely somewhat pubescent in the upper part with short curled hairs.

In wet places, especially by the sides of rills on mountains. Apparently common on those of the Scottish Highlands. My specimens are all from the Braemar Mountains, Aberdeenshire; but Professor Babington says it also occurs on the Clova Mountains, Forfarshire; Ben Lomond, Stirlingshire; Ben Voirlich, and the Breadalbane Mountains, Perthshire. Mr. Baker informs me he has seen it from the Cheviots, where it was first found by

Dr. F. Douglas, and afterwards by Dr. Tate; it has also been found by Sir W. C. Trevelyan in the Durham part of Teesdale.

England, Scotland. Perennial. Summer and Autumn.

Stems 2 to 9 inches high, generally growing in small tufts, with the stolons and barren branches, into which the latter gradually pass, often matted. Leaves $\frac{1}{2}$ to 1 inch long, somewhat resembling those of E. obscurum, with which the similarity of the stolons also connects it. Flowers very small, $\frac{1}{6}$ inch across, pale-rose, often solitary, and rarely more than 3 in number, with short pedicels, which, however, elongate remarkably when the fruit is quite ripe, attaining a length of 1 to 2 inches. Pod 1 to $1\frac{1}{2}$ inch long, resembling that of E. alsinifolium. The seeds, however, have not the prominent scale at the top as in that plant, they are also shorter and smoother. The whole plant is nearly glabrous in all the examples I have met with.

I have great hesitation in accepting this as a species distinct from E. alpinum, as I find it extremely difficult to separate dried specimens which are destitute of stolons, and though I have collected both forms, I never supposed at the time I was collecting two species.

Greater Alpine Willow-herb.

German, *Gauchheilblättriger Schotenweiderich.*

SPECIES XIII.—EPILOBIUM ALPINUM. *Fries.*

PLATE DVII.

Gr. & Godr. Fl. de Fr. Vol. I. p. 578, obs.
Bab. Ann. Nat. Hist. Ser. II. Vol. XVII. p. 313.

Stolons produced in summer, appearing above the ground, short, slender, bearing an irregular rosette of obovate green leaves. Stem erect or ascending, with 2 hairy lines, otherwise sub-glabrous. Leaves opposite, shortly stalked, oblong-elliptical, or the lower ones obovate, gradually attenuated at the base into the petiole, rounded at the apex, very faintly denticulate or entire. Bracts opposite (or rarely alternate), crowded together at the top of the stem. Buds acute. Flowers solitary, or 2 or 3 together at the top of the stem, drooping until after expansion. Calyx-segments oblong, acute. Petals about a quarter as long again as the calyx-segments. Pods sub-glabrous, on a very long pedicel when fully ripe. Seeds obovate-ovoid, with the testa scarcely produced beyond the nucleus of the seed (there being only a slight raised ridge over the top of the seed on the inner side), attenuate and acute below, very faintly rough-

ened with almost imperceptible tubercles. Plant sub-glabrous, rarely somewhat pubescent with short curled hairs.

In wet places, especially by the sides of rills on mountains, apparently confined to those of the Scottish Highlands. I have only collected it on the Breadalbane Mountains in Perthshire, but Professor Babington has seen it from Ben Wyvis, Ross-shire; Drumochter, Inverness-shire; Ben-na-buird, Braemar, Aberdeenshire; and Clova, Forfarshire.

Scotland. Perennial. Summer and Autumn.

Extremely like E. anagallidifolium (if, indeed, it be distinct from the plant so called), but generally smaller. The British specimens which have passed through my hands have the stems 1 to 2 inches long, though I have Scandinavian ones 3 or 4 inches in length. The stolons bear the same relation to those of E. anagallidifolium, that those of E. tetragonum do to those of E. obscurum. The leaves are more regularly elliptical than in the preceding species, being broadest about the middle, and not towards the base, as in E. anagallidifolium; the lower leaves are distinctly obovate. The flowers, pods, fruit-pedicels and seeds are all similar, but the calyx-segments, and consequently the buds, are more acute. The plant is generally tinged with red, particularly towards the base, and it is said to be sometimes pubescent, but I have only seen sub-glabrous specimens.

Lesser Alpine Willow-herb.

GENUS II.—ŒNOTHERA. *Linn.*

Calyx-tube cylindrical, adhering to the ovary and prolonged for a considerable distance above it; limb divided to the base into 4 reflexed segments, which, as well as the part of the tube beyond the ovary, separate circumcissily and fall off after flowering. Petals 4. Stamens 8. Ovary 4-celled; placentæ in its axis; ovules numerous; style filiform; stigma 4-partite with linear segments or capitate. Capsule 4-celled or 1-celled by the disappearance of the dissepiments, 4-valved; placentæ either in the axis or cohering with the dissepiments. Seeds numerous, without a tuft of hairs at the chalaza, but sometimes with a slightly elevated ring at that point.

Herbs or under-shrubs, with alternate, entire toothed or pinnatifid leaves, and axillary or terminal yellow white or pink flowers, frequently opening in the evening and closing during the day, often disposed in spikes.

The origin of the name of this genus are the two Greek words οινος (*oinos*), wine, and θηρα (*thera*), imbued or penetrated with, the roots having a vinous scent when dried: they were also formerly eaten as incentives to wine-drinking, as olives are; hence the name was changed from *onagra*, the ass food, to *œnothera*, the wine-trap. We are not sure that the change was necessary.

SPECIES I.—ŒNOTHERA BIENNIS. *Linn.*

PLATE DVIII.

Root biennial or annual. Stem erect, often simple, herbaceous. Leaves shortly stalked, the radical ones oblanceolate-elliptical; stem-leaves elliptical or lanceolate-elliptical, all remotely repand-denticulate. Flowers in a terminal leafy spike. Free part of the calyx-tube longer than the ovary and the calyx-segments. Petals inversely deltoid, obcordate, yellow. Anthers linear, versatile. Stigma 4-partite. Capsules tetragonal-cylindrical, tapering to the apex, somewhat woody, obsoletely 4-ribbed, pubescent, many-seeded.

In sandy waste places and cultivated grounds. A North American plant, which is now perfectly established on the Lancashire coast, at Crosbie, near Liverpool, and occurring occasionally throughout Britain, but generally an outcast from gardens.

[England, Scotland.] Biennial or Annual. Summer and Autumn.

Root a tapering whitish or pink tap-root. Stem 2 to 3 feet high, branched in luxuriant examples. Radical leaves 6 inches to 1 foot long; stem-leaves 3 to 6 inches; all attenuated at the base into a short petiole, with thick white midribs. Flowers sessile, with the calyx-tube about 2 inches long, the free portion twice as long as the part adhering to the ovary; calyx-segments acuminate, with slender points diverging in bud. Petals $1\frac{1}{4}$ to $1\frac{1}{2}$ inch or more across, bright yellow. Pod 1 to $1\frac{1}{2}$ inch long, with a broad blunt rib on the back of each valve. Seeds in 2 rows in each cell, oblong, angular, pale-brown. Plant dull-green, sub-glabrous, with the stem, calyces, petioles, midribs, and margins of the leaves more or less hairy; sometimes the whole of the leaves, especially the under sides, have very short distant hairs.

Common Evening-Primrose.

French, *Onagre Bisannuelle.* German, *Zweijahrige Nachtkerze.*

This pretty plant is well known in our gardens, and grows luxuriantly even in the neighbourhood of large towns. It is in its glory as the sun is setting, when its bright sulphur-coloured petals open by a sudden retraction of the calyx-leaves, which are thrown forcibly against the peduncles. The flowers continue open throughout the night, until an hour or two after sunrise, when they partially close, to open again, or

to give place to new blossoms, of which there is a constant succession. It is sometimes called the Tree Primrose and the Evening Star. Near Woodbridge, in Suffolk, large tracts of land are covered with this pretty plant, and the Quaker poet Bernard Barton, who spent the chief part of his life in that town, has written some lines on this his native flower which must always be associated with it:—

"Fair flower, that shun'st the glare of day,
Yet lov'st to open, meekly bold,
To evening's hues of sober grey
Thy cup of paly gold.

I love to watch, at silent eve,
Thy scatter'd blossoms, lonely light,
And have my inmost heart receive
The influence of that sight.

I love, at such an hour, to mark
Their beauty greet the night-breeze chill,
And shine 'mid shadows gathering dark,
The garden's glory still.

For such 'tis sweet to think awhile,
When cares and griefs the breast invade;
In friendship's animating smile,
In sorrow's dark'ning shade.

Thus it burst forth, like thy pale cup,
Glistening amid its dewy tears,
And bears the sinking spirit up,
Amid its chilling fears.

But still, more animating far
If meek religion's eye may trace,
E'en in thy glimmering earth-born star,
The holier hopes of grace.

The hope, that as thy beauteous bloom
Expands, to glad the close of day,
So through the shadows of the tomb
May break forth mercy's ray."

SPECIES II.—ŒNOTHERA ODORATA. *Jacq.*

PLATE DIX.

Root biennial or annual. Stem erect, usually simple, herbaceous. Leaves subsessile, the radical ones strap-shaped, attenuated at both ends, remotely and sharply denticulate-serrate; stem-leaves lanceolate, waved on the margins. Flowers in a terminal leafy spike. Free part of the calyx-tube longer than the ovary and calyx-segments. Petals inversely-deltoid, obcordate, yellow fading

to orange. Anthers linear, versatile. Stigma 4-partite. Capsules cylindrical-clavate, somewhat woody, strongly 4-ribbed, hispid, many-seeded.

In sandy waste places, and in cultivated fields. A Patagonian plant, which is now perfectly established in the cornfields near St. Heliers, Jersey, and also more sparingly on the sands of St. Aubin's Bay. The late Mr. T. Clark found it abundantly on the sands at Burnham, Somerset, and Mr. Borrer, at Weston, in the same county. I possess a specimen from Laira, Plymouth, Devon, collected by Mr. Keys; and Mr. T. Archer Briggs has sent me examples collected there in 1862.

This species bears some resemblance to Œ. biennis, but is more slender and rigid, with much narrower and distinctly denticulate leaves and a more lax raceme. It may always be distinguished by the capsule, which is enlarged towards the apex instead of tapering. The stem is branched in luxuriant examples, as in the preceding, but is more pubescent. The flowers are about the same size, but much brighter and deeper yellow, and become more decidedly orange when they fade. Seeds smaller, paler, and less angular, and the colour of the whole plant brighter green than in Œ. biennis.

Sweet-scented Evening-Primrose.

GENUS III.—LUDWIGIA. *Linn.* (*Elliot*).

Calyx-tube 4-sided-prismatic, cylindrical or turbinate, adhering to the ovary, and not prolonged above it; limb divided to the base into 4 segments, commonly persistent. Petals 4, often minute or absent, inserted in the throat of the calyx. Stamens 4, inserted with the petals. Ovary 4-celled, usually crowned with a 4-lobed disk surrounding the stylopod; placentæ in the axis; ovules very numerous; style short; stigma capitate, often with as many furrows as there are cells in the ovary. Capsule short, or rarely elongated, 4-celled, frequently opening by the separation or perforation of the stylopod, at length 4-valved. Seeds very numerous, with a thin testa without hairs.

Aquatic or marsh herbs, with alternate or opposite, entire or serrate leaves, and solitary, axillary, sessile, or shortly-stalked yellow or purple flowers, frequently arranged so as to form a terminal raceme.

The name of this genus was given to it by Linnæus, in honour of Christian Gottlieb Ludwig, once professor of medicine at Leipsic, and author of "Definitiones Plantarum" and other botanical works.

SPECIES I.—LUDWIGIA PALUSTRIS. *Elliot.*

PLATE DX.

Isnardia palustris, *Linn.* *Bab.* Man. Brit. Bot. ed. v. p. 122. *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 145 ; et *Auct. Plur.*

Stem procumbent or floating, emitting roots from the lower nodes. Leaves opposite, shortly stalked, oval, acute, entire. Flowers sessile, axillary. Calyx-segments deltoid, abruptly acuminate or sub-cuspidate. Petals rarely present. Capsule oblong-obovate, truncate at the apex, bluntly 4-sided. Plant glabrous and somewhat succulent.

In pools in boggy soil. Very rare. Buxted, Sussex; Petersfield Heath and Brockenhurst, Hants.

England. Perennial. Late Summer.

Stem 2 inches to 1 foot long, generally branched. Leaves $\frac{3}{4}$ to 1 inch long, broadly ovate, rather abruptly attenuated into a short petiole, shining. Flowers $\frac{1}{8}$ inch long; the petals do not seem to have been found on the European plant, but Torrey and Gray, in their Flora of North America, Vol. I. p. 525, state that it has sometimes "small reddish petals," and as the American plant appears to be precisely the same as the European, they have probably been overlooked. Style very short. Capsule $\frac{1}{10}$ inch long. Seeds oblong, angular, pale yellowish-brown.

I have only seen this plant grown on Goose Green or St. Peter's Marsh, between St. Heliers and St. Aubin's, Jersey. It has somewhat the habit when growing of Peplis Portula, though much larger; but the leaves are of the same deep shining green, and the whole plant more or less tinged with dull purplish-red.

I have followed the American botanists and Mr. Bentham in including Isnardia under Ludwigia.

Marsh Isnardia.

French, *Isnardie des Marais.* German, *Sumpf Isnardie.*

GENUS IV.—CIRCÆA. *Linn.*

Calyx-tube turbinate, adhering to the ovary, above which it is constricted and produced in the form of a short obconical-cylindrical tube ; limb divided to the base into 2 reflexed segments, which as well as the part of the tube beyond the ovary separate circumcissily and fall off after flowering. Petals 2-cleft with obovate lobes. Stamens 2. Ovary 2-celled, crowned with a disk surrounding the base of the style, and expanded at the mouth of the con-

stricted part of the calyx-tube in the form of a slightly 2-lobed cushion or disk (stylopod); placentæ in the axis; ovules 1 in each cell. Capsule obovate or oblanceolate-ovoid, covered with hairs hooked backwards at the point, 2-celled, 2-seeded, and at length 2-valved, or by abortion 1-celled and 1-seeded.

Herbs with opposite ovate finely toothed leaves, and white or flesh-coloured flowers in naked terminal racemes, with the pedicel reflexed in fruit.

This genus of plants is named after the famous enchantress of ancient mythology, Circe, who bewitched the companions of Ulysses. The fruit being covered with hooked prickles, lays hold of the clothes of passers-by, as it is fabled Circe did with her enchantments.

SPECIES I.—CIRCÆA LUTETIANA. *Linn.*

PLATE DXI.

Stem generally pubescent, with glandular hairs. Leaves dim above, stalked, ovate, rounded or truncate or sub-cordate at the base, acute or acuminate at the apex, repand-denticulate or faintly denticulate-serrate. Raceme mostly without bracts at the base of the pedicels. Disk projecting beyond the orifice of the calyx-tube. Petals inversely-semicircular-deltoid, 2-cleft. Fruit obovate-ovoid, obtuse, usually 2-celled and 2-seeded, clothed with reflexed stiff bristly hooked hairs.

In damp shady woods, especially among loose stones. Rather common, and generally distributed; but becoming rare towards the North of Scotland, though it has been reported from Caithness.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock creeping. Stem fragile erect, or decumbent at the base, with the nodes swollen, 1 to 2 feet high, slender, round, branched or simple. Petioles $\frac{1}{2}$ to 2 inches long, laminæ $1\frac{1}{2}$ to 3 inches, sprinkled with minute transparent dots when held up to the light. Racemes terminating the stem and branches, lax, elongating in fruit. Pedicels about as long as the calyx, spreading in flower, reflexed in fruit. Flowers $\frac{1}{10}$ inch across. Calyx with the part of the tube that adheres to the ovary thickly clothed with deflexed hairs hooked downwards at the end; limb divided down to the tube, reddish, speckled. Petals white or flesh-colour, broader than long, deeply divided into 2 roundish lobes. Fruit $\frac{1}{5}$ inch long, densely clothed with hooked white bristles. Plant deep dull-green, the leaves paler and shining beneath, the stem generally tinged

with reddish below especially at the nodes, sub-glabrous, with the stem, rachis, peduncles, calyx, petioles, veins and margins of the leaves more or less hairy.

Common Enchanter's-Nightshade.

French, *Circée Commune.* German, *Gemeines Hexenkraut.*

Dr. Prior tells us that "the name of this plant has, by some blunder, been transferred from the Mandrake (Atropa mandragora) to an insignificant garden-weed. The Mandrake was called Nightshade, from having been classed with the *Solana* and *Enchanter's*, from its Latin name Circæa, Greek Κιρκαια, given to it after the goddess Circe; or, as Dioscorides has it, quoted by Westmacott, 'Twas called Circæa, because Circe, an enchantress, expert in herbs, used it as a tempting powder in amorous concerns.'"

SPECIES II.—**CIRCÆA ALPINA.** *Linn.*

PLATE DXII.

Stem generally glabrous or very thinly hairy except at the top. Leaves slightly shining above, long-stalked, ovate, cordate or sub-cordate at the base, acuminate at the apex, remotely denticulate-serrate. Raceme generally with very minute bracts at the base of the pedicels. Disk scarcely projecting beyond the orifice of the calyx-tube. Petals inversely deltoid, 2-cleft. Fruit oblanceolate-ovoid, sub-acute, 1-celled and 1-seeded, clothed with spreading soft bristly slightly-hooked hairs.

In woods, banks, and stony places. Common in hilly countries. In Wales, York, the Lake district, and throughout the whole of the Scotch Highlands, extending to Orkney.

England, Scotland, Ireland. Perennial. Summer.

This comes very near C. lutetiana, but is a smaller plant, the stems 3 inches to 1 foot high, the petioles longer in proportion, the laminæ of the leaves thinner, yellower green, more shining, usually more deeply cordate at the base, more acuminate, and much more distinctly dentate or dentate-serrate. The pedicels have usually minute bracts at the base, but this sometimes occurs in C. lutetiana; the flowers are smaller, with the petals much more narrowed at the base; the green disk which lines the calyx-tube projects much less, and is not so evidently 2-lobed. The fruit-pedicels are less reflexed, the fruit itself commonly breaks off when the plant is dried, instead of remaining attached to the pedicel as in C. lutetiana; it is narrower and more pointed, from one of the cells being usually abortive, and the hairs upon it are much less stiff and less hooked at the end.

C. intermedia (Ehrh.) is generally considered as a variety of this species by those botanists who do not hold it distinct both

from C. lutetiana and C. alpina, or believe it to be a hybrid between the two. This plant is 1 foot to 18 inches high, subglabrous, and with the general habit of C. lutetiana, but with the long-stalked broadly-ovate and abruptly-acuminate strongly dentate-serrate leaves of C. alpina; like the latter it has bracts at the base of the pedicels and the petals narrowed at the base. The fruit is subglobular-ovoid, and is said by M. Döll to be always sterile, an observation which I have not had an opportunity of verifying: this circumstance has been urged in support of its hybrid origin; but against this is the fact that it often grows in places where the other two plants are not found in company. Characteristic specimens have been collected in Cheshire by Mr. G. E. Hunt; also near Loch Lomond by the late Mr. W. Gourlie; and by myself in Collinton Woods, near Edinburgh. On the whole I incline to the views of those who consider it a very luxuriant form of C. alpina. Examples of C. lutetiana with the leaves more dentate than usual, and inclining to cordate at the base, are very often labelled C. intermedia by British botanists.

Alpine Enchanter's-Nightshade.

French, *Circée des Alpes.* German, *Gebergs Hexenkraut.*

Sub-Order II.—HALORAGEÆ.

Ovary 1- to 4-celled, with a single ovule in each cell. Seeds albuminous. Leaves whorled, opposite or alternate, entire, toothed or pectinate. Petals generally small, frequently absent.

GENUS V.—MYRIOPHYLLUM. *Linn.*

Flowers monœcious or perfect. Calyx 4-partite in the male flowers: adhering to the ovary and 4-toothed in the female and perfect ones. Petals 4, boat-shaped, caducous in the male flowers: inconspicuous or absent in the female. Stamens 8, 4, or 6. Ovary 4-celled; stigmas oblong, recurved, papillose within. Fruit of 4 (or by abortion 2) indehiscent achenes enclosed in the adherent tube of the calyx, at length separating from each other.

Aquatic herbs with verticillate (more rarely opposite or alternate) pectinate leaves, and terminal spikes of small sessile flowers in the axils of pectinate, toothed, or entire bracts; the part of the stem which bears the male flowers usually rising out of the water until the pollen is shed.

The name of this genus comes from the Greek words μυριος (*myrios*), a myriad, and φυλλον (*phyllon*), a leaf; in reference to the numerous divisions of the leaves.

SPECIES I.—MYRIOPHYLLUM VERTICILLATUM.

Linn.

PLATE DXIII.

Leaves verticillate, commonly 5 in each whorl, loosely pectinate, with the segments capillary, much longer than the internodes between the crowded whorls. Flowers verticillate, usually 5 in each whorl, each in the axil of a pectinated bract, which more or less exceeds the flower in length; spike erect in bud, generally terminated by a crown or coma of empty bracts. Petals caducous. Anthers oblong. Fruit sub-globose, not longer than broad before the separation of the carpels, which are not ridged on the back.

Var. α, *genuinum.*

M. verticillatum, *D. C.* Fl. Fr. Vol. IV. p. 417; Prod. Vol. III. p. 68.

Bracts oblong-lanceolate, many times longer than the flowers, and not much shorter than the leaves, remotely pectinate with the pinnæ rather short, filiform and distant. Stem flowering almost to its base below the water or on mud.

Var. β, *pectinatum.*

M. pectinatum, *D. C.* Fl. Fr. Vol. V. p. 529; Prod. Vol. III. p. 68.

Bracts scarcely longer than the flowers, and very much shorter than the leaves, pectinate with pinnæ very short, linear-strapshaped and contiguous. Stem flowering only in the upper part and rising out of the water.

In ditches and ponds. Rather rare, though sparingly distributed from Sussex to Northumberland. Apparently most common on the east side of the island. Vars. α and β about equally common

England, Ireland. Perennial. Late Summer.

Rootstock creeping in the mud, and sending up floating stems, varying according to the depth of the water. Leaves 1 to 2 inches long, with the segments distant, hair-like, collapsing and soon withering when taken from the water; the whorls placed very close together. Flowering part of the stem or spike usually longer than the leafy portion that is destitute of flowers, especially in the form with elongated bracts. Whorls of flowers very numerous. Lower flowers female, apetalous; the upper ones perfect and male, with greenish-yellow caducous boat-shaped petals, $\frac{1}{10}$ inch long. Anthers

large, yellow. Fruit small, olive, sub-globular, 4-lobed, $\frac{1}{12}$ inch long, at last splitting into 4 achenes. Plant bright-green, glabrous.

The vars. α and β pass insensibly into each other.

Whorled Water-Milfoil.

French, *Volant d'Eau verticillé.* German, *Quirlblüthiges Tausendblatt.*

SPECIES II.—MYRIOPHYLLUM SPICATUM. *Linn.*

PLATE DXIV.

Leaves verticillate, commonly 4 in each whorl, loosely pectinate, with the segments capillary, usually not exceeding the internodes between the rather distant whorls. Flowers verticillate, usually 4 in each whorl, each in the axil of an entire or (towards the base of the spike) closely pectinate bract, which is about equal to the length of the flower; spike erect in bud, without a coma of empty bracts at the apex. Petals caducous. Anthers narrowly-oblong. Fruit sub-globose, a little longer than broad before the separation of the carpels, which are not ridged on the back.

In ponds and ditches. Common, and generally distributed, but more rare in the North.

Very like M. verticillatum, but smaller, with the leaves usually in more distant whorls, their segments shorter, more olive; the whorls of flowers fewer and much more distant, with the bracts shorter, so that the spike is more distinct from the leafy portion; the petals larger, dull-red. The bracts, however, are often very similar to those of M. verticillatum, var. pectinatum; but the upper ones are in all the specimens I have seen entire and shorter than the flowers, which never seems to be the case in any of the forms of the preceding. The lower leaves soon decay, so that the base of the stems becomes naked.

Spiked Water-Milfoil.

French, *Volant d'Eau en Épi.* German, *Ährenblüthiges Tausendblatt.*

SPECIES III.—MYRIOPHYLLUM ALTERNIFLORUM. *D. C.*

PLATE DXV.

Leaves verticillate, 4 or 3 in a whorl, very loosely pectinate, with the segments short, capillary, usually not exceeding the internodes between the rather close whorls. Lower female flowers whorled, usually three in each whorl, the lowest whorl having the flowers in bracts similar to the leaves, the upper ones in the axils

of entire or closely pectinated bracts, which are shorter than the flowers; uppermost female flowers sometimes opposite or alternate; male flowers generally opposite or alternate, rarely whorled, in the axils of bracts much shorter than the flowers; male portion of spike hooked in bud, without a coma at the apex. Petals caducous. Anthers linear-oblong. Fruit ovoid-conical, truncate, longer than broad before the separation of the carpels, which are not ridged on the back.

In ponds and ditches. Not uncommon and generally distributed. In Scotland it seems to be more common than M. spicatum.

England, Scotland, Ireland. Perennial. Summer and Autumn.

A more slender and delicate species than either of the preceding, though much resembling M. spicatum in habit; the leaves, however, are in closer whorls and with much shorter and more distant segments; the part of the spike which bears male flowers is hooked while in bud; the petals are yellow with red lines; the fruit smaller and narrower. The character taken from the male flowers being alternate is not constant, they are nearly as often opposite and sometimes whorled with 3 in a whorl. As in M. spicatum, the lower part of the stem soon becomes bare of leaves for a considerable portion of its length.

Alternate-flowered Water-Milfoil.

French, *Volant d'Eau à Fleurs Alternes.* German, *Wechselblüthiges Tausendblatt.*

GENUS VI.—HIPPURIS. *Linn.*

Flowers perfect. Calyx completely adherent to the ovary, the limb represented merely by a slightly elevated ring. Petals none. Stamen 1, inserted on the rim of the calyx. Ovary 1-celled, with 1 pendulous ovule; style papillose and stigmatiferous throughout its whole length. Fruit herbaceous, 1-celled, 1-seeded.

Aquatic herbs with creeping rhizomes, and whorled linear or lanceolate entire leaves. Flowers whorled, sessile, axillary, very minute, produced on the part of the stem which is out of the water.

The name of this genus of plants is derived from the words ἱππος (*hippos*), a horse, and οὐρα (*oura*), a tail; from the resemblance of the stem to a horse's tail.

SPECIES I.—HIPPURIS VULGARIS. *Linn.*

PLATE DXVI.

Stem stout, erect. Leaves linear-strapshaped, 6 to 12 in each whorl, acute and sphacelate at the apex.

In ponds and ditches. Sparingly but widely distributed throughout the kingdom.

England, Scotland, Ireland. Perennial. Summer.

Rootstock rather thick, creeping in the mud, sending up at intervals erect stems which rise out of the water, or if the latter be deep, remain submerged, in which case they swim and have the leaves translucent, without epidermis and without flowers in their axils; the stems which rise out of the water are stiff, rather thick, 8 inches to 2 feet high, with close whorls of spreading leaves longer than the internodes. Flowers very small, greenish, in whorls in the axils of the leaves. Anthers reddish. Fruit about the size of a grain of sago, ovoid, smooth, olive-coloured. Plant bright green, glabrous, the submerged leaves paler and broader than those above water.

Common Mare's-tail.

French, *Presse Commune.* German, *Gemeiner Tannwedel.*

ORDER XXIX.—CUCURBITACEÆ.

Annual or perennial herbs, often rough with hairs or weak prickles, having succulent stems, which usually climb by tendrils which are solitary and from the side of the leaf-stalk. Leaves alternate, palmately-veined and commonly palmately-lobed; exstipulate unless the tendril be considered as a stipule. Flowers on axillary peduncles, solitary, fasciculate, cymose, paniculate or racemose, monœcious or diœcious, very rarely perfect, commonly yellow or greenish. Calyx-tube short and generally campanulate in the male flowers: sometimes contracted above the ovary and produced beyond it in the female; limb 5- rarely 6-toothed, valvate, sometimes obsolete. Corolla of 5 petals, inserted on the limb of the calyx, distinct or commonly more or less united with each other and adhering to the calyx, usually conspicuously veined. Stamens 5, confined to the male flowers, usually united in 3 sets of 2, 2, and 1 separate, rarely free; filaments short and thick, sometimes all more or less united at the base; anthers generally long and variously folded or flexuous, adnate, extrorse, generally 2-celled. Ovary confined to the female flowers, inferior, 3- to 5-celled, more rarely 1-celled, the edges of the carpels inflected until they reach nearly to the centre, when they still continue curving inwards until the placentæ are brought

out nearly to the walls of the ovary: with 3 spurious dissepiments produced inwards from where the midrib of these supposed carpels would be situated,* so that the ovary appears 3-celled with parietal placentæ; ovules numerous, in several rows, rarely few or solitary; style short, more or less deeply 3-cleft; stigmas thickened, papillose or lobed. Fruit fleshy or juicy, with a leathery rarely membranous rind, often 1-celled by the disappearance of the partitions. Seeds anatropous, compressed in a juicy or membranous arillus; testa leathery; albumen none; cotyledons foliaceous.

GENUS I.—BRYONIA. *Linn.*

Flowers monœcious or diœcious. Calyx in the male flowers widely bell-shaped, 5-toothed: in the female with the base of the tube subglobose adhering to the ovary, the upper portion constructed and produced above the ovary into a short slender tube; limb bell-shaped, 5-toothed, the limb and the part of the tube free from the ovary deciduous. Petals 5, cohering only at the base or free. Male flowers with triadelphous stamens with short filaments and long sinuous 1-celled anthers; female flowers with a short thick style terminated by 3 spreading irregularly-cut stigmas papillose on the inside. Fruit globose or ovoid, smooth, few-seeded, usually 1-celled when mature. Seeds slightly compressed, more or less distinctly margined, not expelled with elasticity when ripe.

Trailing or climbing juicy herbs, with leaves palmately 5-lobed. Tendrils simple or more rarely forked. Flowers rather small, greenish-white, in axillary cymes or fascicles. Fruit small, usually black or red.

The name of this genus of plants appears to have reference to the vigorous and active growth of its annual stems, which proceed from the perennial root, and adhere to other shrubs with their tendrils. The Greek word βρυω (*bryo*), I sprout up or germinate, is the origin of the generic name of the plant.

SPECIES I.—BRYONIA DIOICA. *Linn.*

PLATE DXVII.

Leaves palmately 5-lobed, rough on both sides. Flowers diœcious; the male flowers in stalked corymbose cymes: the female

* See the diagram of the section of the ovary of Bryonia, Plate DXVII., where the spurious partitions are represented by double hard lines, and the supposed position of the carpels by dotted lines.

in sessile or subsessile umbellate cymes and with the calyx half as long as the corolla. Berries red when ripe, 1-celled at maturity.

In hedges and thickets. Very common in the South of England, but becoming rare in the Midland counties, and probably not native North of Yorkshire and Cheshire, though it occurs in Northumberland, but is said to have been probably introduced in the stations recorded in that county.

England. Perennial. Summer and Autumn.

Rootstock thick, with 1 or 2 slightly-branched fleshy fusiform pale yellowish-brown wrinkled tubers. Stem brittle, angular, branched mostly at the base, climbing by means of long simple tendrils, which spring from the side of the leaf-stalks. Leaves stalked, with the stalk curved, shorter than the lamina, which is divided into 5 lobes, of which the middle one is the longest, all the 5 slightly angular. Flowers in axillary cymes, those on the male plants stalked, corymbose, of 3 to 8 flowers, which are greenish-white, $\frac{1}{2}$ to $\frac{3}{4}$ inch across. Calyx widely bell-shaped, with the lobes triangular, shorter than the tube. Corolla of 5 oblong reticulated lobes with transparent hairs. Anthers yellow. Female flowers in sessile or sub-sessile umbellate cymes of 2 to 5 flowers, with the perianth resembling that of the male flowers, but smaller and with the addition of a smooth globular inferior ovary terminated by a short cylindrical neck upon which the bell-shaped part of the calyx is supported. Petals shorter and less distinctly reticulated than in the male flowers. Stamens none. Stigmas 3, each of them 2-cleft, papillose. Berries almost the size of peas, dim scarlet, 3- to 6-seeded. Seeds large greyish-yellow mottled with black or black mottled with yellow. Plant somewhat succulent, bright-green, somewhat shining, rough, with short white prickle-like hairs.

Dr. Lankester finds a small fruited form at Felixstowe, Suffolk.

Red-berried Bryony.

French, *Bryone Dioique.* German, *Rothbeerige Zaunrübe.*

This plant is known amongst the country people as wild vine, wild hops, white bryony, tetterberry, and wild nep. Its roots attain an enormous size. Gerarde says: "The Queen's chief surgion, Mr. William Godorons, a very curious and learned gentleman, shewed me a root hereof that waied half an hundred weight, and of the bignes of a child of a yeare old." In this root is found a somewhat milky juice, very nauseous and bitter to the taste. It is of a violently purgative and cathartic nature, and has been used in medicine, but is now seldom employed by regular practitioners. It was formerly given in dropsy and other complaints, and is of so acrid a character that, if applied to the skin, it produces redness and even blisters. Like other plants of a like nature, it has found favour as a cataplasm, in the same way as we now apply mustard poultices, and is extolled as a remedy for rheumatism, sciatica, &c. It seems to have been a favourite medicine with the older herbalists, and was prescribed by Galen,

Dioscorides, and afterwards by Gerarde. In those days men's constitutions must have been tougher than in the present time, for we think but few could stand such doses as were then common. Galen, moreover, writes that this root is profitable for tanners to thicken their leather hides with. And, according to Gerarde, "the root of Bryony stamped with some sulphur or brimstone, and made up into a masse or lump, wrapped in a linnen clout, taketh away the morpheu, freckles, and spots of the face, if it be rubbed with the same, being dipped first in vineger." Withering says, a decoction made by boiling one pound of the fresh root in water is "the best purge for horned cattle." The acrid and cathartic properties of the root are shared in some measure by all parts of the plant; the berries are emetic and even poisonous: the young shoots in the spring, however, are inert, and are sometimes boiled and eaten as greens without mischief. The active principle of the plant is distinguished by chemists as an alkaloid called *bryonin*. The French call the root *Navet du Diable*.

ORDER XXX.—GROSSULARIACEÆ.

Shrubs, sometimes spiny. Leaves alternate, often fascicled, exstipulate, petiolate, with the petiole usually dilated and commonly fringed at the base, the lamina palmately veined and lobed, frequently sprinkled with resinous dots. Flowers racemose or subsolitary, produced from the same bud as the leaves, and terminating the very short axillary branches, or sometimes from leafless buds, generally perfect, rarely diœcious, regular, greenish, reddish-olive, purplish-red, or yellow. Calyx coloured, with the tube bell-shaped or sub-cylindrical, united with the ovary; limb marcescent, 5- rarely 4-cleft, imbricated in æstivation. Petals as many as the lobes of the calyx, inserted in the throat of the tube, deciduous, small. Stamens as many as the petals, and inserted with them; anthers 2-celled, introrse. Ovary inferior, adnate with the calyx-tube, 1-celled; placentæ 2, parietal; ovules generally numerous, rarely few; styles 2, rarely 3 or 4, sometimes distinct, sometimes more or less united; stigma extremely short, obtuse. Fruit a pulpy or watery berry crowned by the withered remains of the calyx, 1-celled. Seeds numerous, rarely few, anatropous, with the raphe at length free from the gelatinous seed-coat, the inner integument crustaceous; albumen fleshy; embryo minute, eccentric.

GENUS I.—RIBES. *Linn.*

Calyx-tube adhering to the ovary; limb cleft or divided into 5 (rarely 4) persistent but withering coloured segments. Petals 5

(rarely 4), small. Stamens 5, very rarely 4 or 6. Fruit a 1-celled berry, many-seeded, or few-seeded by abortion.

The only genus of the order.

The name of this genus is that of an acid plant, mentioned by the Arabian physicians, which has been thought to be the *Rhéum Ribes* of Botanists.

Section I.—GROSSULARIA. *Richard.*

Stems generally spiny. Peduncles short, 1-, 2-, or (more rarely) 3-flowered. Calyx more or less campanulate. Young leaves plicate.

Species I.—RIBES GROSSULARIA. *Linn.*

Plate DXVIII.

R. Uva-crispa, *Linn. Gr. & Godr.* Fl. de Fr. Vol. I. p. 634.

Branches with 1 to 3 strong spines at the base of the short lateral branchlets or fascicles of leaves. Leaves roundish, 3- to 5-cleft, with the segments rounded at the apex and cut. Peduncles from the fascicles of leaves, short, 1- or 2-flowered, drooping, with 1 to 3 small bracts about the middle. Calyx-tube campanulate, hairy below; calyx-segments reflexed, ovate. Petals small, erect, ovate.

Var. *α, glandulosum.*

R. Grossularia, *Linn. Sm.* Eng. Bot. No. 1292.

Fruit clothed with glandular hairs. Leaves glabrous and shining above.

Var. *β, Uva-crispa.*

R. Uva-crispa, *Linn. Sm.* Eng. Bot. No. 2057.

Fruit when mature smooth. Leaves pubescent, smaller and less shining than in var. *α*.

In woods, thickets, and hedgerows, and by the sides of streams. Not uncommon, and generally distributed, but probably the produce of seeds of the cultivated gooseberry in many of its localities. The late Dr. Bromfield considered it certainly indigenous in the Isle of Wight.

England, [Scotland, Ireland.] Shrub. Spring.

A bushy shrub 2 to 4 feet high, with very numerous stout spreading branches, with ash-coloured bark, furnished with 1, 2, or 3 spines under each leaf-bud. Lateral leaf-buds developing into extremely short branches, so that the leaves appear to be in fascicles.

Leaves appearing with the flowers, stalked, 3 to 5 in each fascicle; lamina 1 to 2 inches across, commonly hairy, especially below. Flowers $\frac{1}{4}$ inch long and nearly as much across, green tinged with brownish-red. Petals greenish-white, very inconspicuous. Stamens erect, longer or shorter than the petals. Style 2-cleft or 2-partite. Bracts variable in number and situation. Peduncles and calyx-tube downy. The fruit of the wild plant I have not seen, but it is said to be considerably smaller than that of the garden gooseberry.

Vars. α and β seem scarcely distinguishable; the small-leaved form β appears to be the most abundant in the wild or sub-spontaneous state.

Gooseberry.

French, *Groseille à Maquereau.* German, *Stachelbeere.*

The Gooseberry-bush is one of the most common of our native garden plants, and has all sorts of local names. In Lancashire and Cheshire it is called feverberry or feaberry; in Norfolk this is shortened to feabes or fapes, as they pronounce it; and in Scotland it is called groser, groset, or carberry. The origin of the name Gooseberry is obscure, and much disputed. Dr. Prior, who has paid great attention to this branch of inquiry, and whom we cannot do better than quote, says: "It seems to have come to us through the French *groseille*, corrupted to *gozel*; and this word *groseille*, from the German *kraüselbeere*, frizzleberry, a name that seems absurd enough when applied to the Gooseberry, and one that could only have arisen from that common source of blunders in the popular names of plants, the mistranslation of a foreign word. The origin of it is clearly the Dutch *kruisbezie*, crossberry, from the triple spine assuming the form of a cross, and which has been mistaken for *kroesbezie*, frizzleberry, and so translated into German and herbalist Latin. In Matthioli, however, Ed. Frankf. 1586, it is given correctly *creutzbeer*. *Groseille* has been usually derived through *grossularia*, from *grossula*, dim. of Latin *grossus*, a small miniature fig. But as the fruit was unknown to the ancients in its cultivated state, and, like so many other productions of the garden, was introduced by the Netherlanders, it is to the language of these latter that we should refer for its name. The derivation of it given in some popular works of reference, from *gost*, a furze-bush—probably a misspelling of the MS. for *gorst*—and that of Patrick Blair and some other herbalists, who say that it was called so 'because when the green geese begin to be eatable it is frequently used as a sauce to them,' is undeserving of any serious attention."

The northern parts of England are especially favourable to the cultivation of the Gooseberry-bush, and it is usually from the districts of Lancashire and Cheshire that we hear of those enormous Gooseberries which are sent to fruit-shows, and astonish by their size rather than their flavour. It is in Lancashire, however, that Gooseberries are brought to their greatest perfection, and it is from stocks there nurtured that the finest varieties are produced. On the Continent, in France and Germany, the Gooseberry is comparatively little known, and poorly estimated. When foreigners see our Lancashire Gooseberries, they are inclined to regard them as a different fruit from their own diminutive specimens at home. Happily this useful and wholesome fruit is to be found in every cottage garden in Britain, and it is most desirable to encourage the introduction of its most useful varieties in every little enclosure. In the neighbourhood of Manchester prizes are given for the finest Gooseberries, which are brought to what are called the

"Gooseberry prize meetings" by the labourers and cottagers of the district. The Gooseberry does not appear to have been known to the ancients, and it is uncertain at what time it was first cultivated in our gardens. Being, however, well suited to our climate, it is probable that it was introduced at a very early date. It is first mentioned in 1573 by Turner as a fruit good in cookery; and Parkinson and Gerarde both recommend it. John Ray writes of the Pearl Gooseberry as in cultivation in his time, though it does not appear to have been much estimated. In France it was scarcely known until a much later date, so that the Parisians had not an appropriate name for it, and its present name refers rather to its modern use as a sauce for mackerel than any original notion of its value. The domestic uses of the Gooseberry are familiar to all housekeepers and lovers of sweet things. In its green unripe state it contains a pleasant amount of citric acid, which renders it a most agreeable fruit in tarts or puddings, and when ripe it is equally acceptable at dessert, or in the form of jam or preserve. A kind of British champagne is made from green Gooseberries, which is liked by many people, and no fruit can be kept in bottles for winter use better than the green Gooseberry.

The varieties of Gooseberries in cultivation are many, numbering, we believe, about seven hundred. Of these some have red fruit, some white, and some green; some have smooth fruit, and some hairy or prickly. In the selection of sorts, we quote Mr. Neill, who observes: "It must be admitted, that though large Gooseberries make a fine appearance on the table, they are often deficient in flavour when compared with some of smaller size. Many of them have very thick strong skins, and are not eatable unless very thoroughly ripened. Some of the large sorts, however, are of very good quality—such as the *Red Champagne* and the *Green Walnut*." Any good garden soil on a dry bottom, and well manured, will suit the Gooseberry; that which is soft and moist produces the largest fruit. The Lancashire connoisseur, when he is growing for exhibition, is not content with watering his bush at the roots and over the top, but he places a small saucer of water immediately under each gooseberry, only three or four of which he leaves on a tree: this is technically called suckling. He also pinches off a great part of the young wood, so as to throw all the strength he can into the fruit. The caterpillars of saw-flies and of various kinds of moths do serious injury to the Gooseberry-bush. We believe the best and almost only method of destroying them is in the winter, by the simple operation of pouring a quantity of boiling water upon them whilst they lie in clusters on the under parts of the bushes.

Section II.—RIBESIA. *Berl.*

Stems generally without spines. Peduncles elongated with racemose flowers 4 or more in number. Calyx campanulate or cylindrical. Young leaves plicate.

SPECIES II.—**RIBES ALPINUM.** *Linn.*

PLATE DXIX.

Branches unarmed. Leaves angular, cleft into 3 or 5 segments, sparingly hairy all over above and on the veins beneath when young, glabrous and shining beneath when mature; segments

oblong-rhomboidal, acute, inciso-serrate. Flowers diœcious, racemose; racemes erect in flower and fruit, those with male flowers 20- to 30-flowered, those with female 2- to 10-flowered. Rachis and pedicels glandular-pubescent. Bracts strap-shaped, longer than the pedicels. Calyx glabrous; limb spreading and nearly flat; the tube oblong-ovoid in the female flowers. Berries red, insipid.

In woods. Truly indigenous in the lower part of the western dales in Yorkshire, and said also to be wild in the counties of Warwick, Stafford? Nottingham, Glamorgan, Durham, and the Lake district. It also occurs in several of the Scotch counties, but has little claims to be considered native in them.

England, [Scotland]. Shrub. Spring.

A bush 2 to 3 feet high, with numerous slender branches with ash-coloured bark. Leaves appearing a little before the flowers, with the petiole shorter than the lamina, which is $1\frac{1}{2}$ to 2 inches across when full grown, with the lobes narrowly rhomboidal, deeply inciso-serrate, usually 3 in number, but sometimes with a smaller one at the base on each side, in which case the leaf becomes sub-cordate instead of broadly wedge-shaped or abrupt at the base, which is the more common form. Racemes of the female flowers 1 to $1\frac{1}{2}$ inch long, of the male 2 to $2\frac{1}{2}$. Flowers $\frac{1}{5}$ inch across, olive-yellow. Calyx-segments oval-oblong, obtuse, 4 times longer than the petals. Style very short, scarcely cleft. Fruit $\frac{1}{4}$ inch in diameter. Plant glabrous when mature, except the upper surface and margins of the leaves, which have distant hairs. Leaves deep-green above, paler and shining beneath.

Tasteless Mountain Currant.

French, *Groseille des Alpes.* German, *Gebirgs Johannisbeere.*

The common name Currant is one transferred from the small grape brought from Corinth, and thence called *Uva Corinthiaca*, to the fruits of several species of Ribes. The fruit of this species has an insipid sweetish taste in its wild state, and is only agreeable to the omnivorous appetites of children, who gather it with avidity. The wood, being hard and tough, makes good teeth for rakes. Cows, goats, sheep, and horses eat the leaves.

SPECIES III.—RIBES RUBRUM. *Linn.*

PLATES DXX. DXXI. DXXII.

Branches unarmed. Leaves scentless, angular, 5-lobed, more or less hairy when young, glabrous or downy beneath when mature; segments ovate-triangular or deltoid, blunt, irregularly crenate-serrate. Flowers perfect, racemose. Racemes stalked, many-flow-

ered, usually drooping, with the rachis and pedicels glabrous or pubescent, but not glandular. Bracts ovate, shorter than the pedicels. Calyx glabrous or with only a few hairs on the veins; limb spreading, nearly flat. Berries red, acid.

Sub-Species I.—Ribes sativum.*

Plate DXX.

R. rubrum var. sativum, *Reich.* Fl. Germ. Excurs. p. 562.
R. rubrum, *Sm.* Eng. Bot. No. 1289.

Leaves $2\frac{1}{2}$ to $3\frac{1}{2}$ inches across when mature, deep green, rather flaccid, sparingly hairy when young, glabrous on both sides when mature. Racemes drooping both in flower and fruit, with the rachis and pedicels glabrous. Calyx pale olive-green, concolorous. Stamens slightly connivent, the filaments equal to the breadth of the anthers. Young fruit globular.

In woods and thickets and by the sides of streams. Not uncommon, both in England (especially the Northern counties) and in Scotland; but probably always the produce of seeds of the garden red currant.

[England, Scotland, Ireland.] Shrub. Spring.

A much-branched shrub, 2 to 4 feet high, with the leaves subcordate at the base, the lobes rather short without glands. Racemes $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long. Flowers $\frac{1}{4}$ inch across. Fruit about $\frac{1}{4}$ inch in diameter, sub-pellucid, red, or varying to ochreous in the garden plant.

Cultivated Red Currant.

French, *Groseille Commune.* German, *Rothe Johannisbeere.*

Although the Currant-bush is commonly found in woods in the northern parts of our island apparently wild, it is doubtful whether the very early Britons were acquainted with it. In Lyte's translation of Dodoen's Herbal, published in 1578, it is called the "Red beyond the Sea Gooseberry;" but this is evidently a translation of the old French name *Groseille d'outre Mer*, and does not relate to its importation from abroad. In France the Red Currant seems to have been known long before the Gooseberry, and to have been more prized than it is at the present time. Both the Gooseberry and Currant seem to have been improved by careful cultivation in Holland, whence the principal varieties are obtained for all European gardens. Gerarde mentions the Red Currant, also the black and white. He says: "This plant is thought to have been unknown to the antient Greekes; some thinke it the Ribes of the Arabian Serapio. However, the shops of late time take it (the faculties consenting thereto) for the true

* Named "R. rubrum α sativum" on the Plate.

Ribes, and of the fruit hereof prepare their *Rob de Ribes.*" The use of the Red Currant fruit is spoken of by this quaint old writer as likely "to extinguish and mitigate feverish heats, represse choler, temper the overhot blood, resist putrifaction, quench the thirst, helpe the dejection of the appetite, stay choloric vomitings and scourings, and helpe the dysentry proceeding of an hot cause."

The domestic use of this pleasant fruit is well known, and, besides its employment in jams, jellies, and tarts of various kinds, a pleasant beverage is made from it in France, called *Eau de Groseilles.* In its preparation with sugar our French neighbours excel us, and a delicious currant-jelly made at Bas-le-Duc is equal to any preserve we have tasted for delicacy of flavour and brightness of appearance. Currant wine is made by fermenting the juice with sugar, and is considered as one of the best "home-made wines," as we may gather from the nursery song of the tempting qualities of "cherry pie and currant wine."

The cultivated varieties of Red Currants are but few. The White Currant is but a departure from the original colour, with a more delicate flavour. Pruning pretty closely is recommended by gardeners to secure full crops of fruit, but the abundant quantities of currants borne by old and neglected bushes appear to throw doubt on the necessity for this practice. We, however, give the results of the late Dr. Neill's experience, and he has been very successful in his own culture, and has had the opportunity of observing others. He recommends that the bushes should be pruned at the usual season of mid-winter, shortening the last year's shoots down to an inch or an inch and a half. Next summer the plants show plenty of fruit, and at the same time throw out plenty of strong shoots. As soon as the berries begin to colour, he cuts off the summer shoots to within five or six inches before the fruit. This is commonly done with the garden-shears, with which a man may go over half an acre of bushes in a day. Sun and air thus get more free access, and more of the vigour of the plant is directed to the fruit; the berries are found not only to be of higher flavour, but larger than usual. The Currant grows freely from cuttings, by which means it is usually propagated. It flourishes best in rich loamy soil, but will grow in almost any situation. The leaves are apt to be infested with a species of aphis which turns the leaves of a red colour, and causes the fruit to become dry and shrivelled.

Sub-Species II.—Ribes sylvestre.

Plates DXXI. DXXII.

R. rubrum var. sylvestre, *Reich.* Fl. Germ. Excurs. p. 562. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 293.

Leaves $1\frac{1}{2}$ to 2 inches across when mature, green above and greyish beneath, rather firm, more or less hairy above and grey-tomentose beneath when young, at length sub-glabrous above, but remaining more or less tomentose beneath. Racemes often erect or spreading in flower, usually drooping in fruit, with the rachis and pedicels finely downy. Calyx tinged or streaked with dull brownish-purple. Stamens erect, filaments shorter than the breadth of the anther. Young fruit globular at the base, suddenly contracted near the apex.

Var. α, *Bromfieldianum.*

R. rubrum var. sylvestre, *Bromf.* Phyt. 1846, p. 519.

Leaves sparingly hairy above, grey-tomentose beneath when young, at length sub-glabrous above but remaining slightly tomentose beneath. Racemes drooping both in flower and fruit. Pedicels equalling or exceeding the fruit.

Var. β, *Smithianum.**

PLATE DXXI.

R. petræum, *Sm.* Eng. Bot. No. 705 (non *Wulfen*).
R. rubrum var. petræum, *Auct. Angl.*

Leaves hairy above, densely grey-tomentose beneath when young, at length sub-glabrous above but remaining tomentose beneath. Racemes erect or spreading in flower, drooping in fruit; pedicels equalling or exceeding the fruit.

Var. γ, *spicatum.*†

PLATE DXXII.

R. spicatum, *Robson. Sm.* Eng. Bot. No. 1290.
R. rubrum var. spicatum, *Auct. Angl.*

Leaves hairy above, densely grey-tomentose beneath when young, at length sub-glabrous above but remaining tomentose beneath. Racemes erect both in flower and fruit; pedicels shorter than the fruit.

In woods and thickets. Var. α generally but sparingly or rather locally distributed in England. Var. β in Yorkshire, Durham, Northumberland, and, according to Dr. Bromfield, in the Isle of Wight. I have gathered what seems nearest this form at Dollar, Clackmannanshire, but the racemes are drooping in flower. Var. γ in a wood at Applegarth, near Richmond, Yorkshire, now extinct.

England, Scotland. Shrub. Spring.

This has smaller and firmer leaves than the common red currant, and they are more hairy when young, and remain more or less tomentose beneath even when mature. The rachis of the racemes is downy, and the flowers are apparently always tinged with dingy-purple. Mr. H. C. Watson pointed out to me the different shape

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* Named "R. rubrum var. γ Smithianum" in the Plate.
† Named "R. rubrum var. ẽ spicatum" in the Plate.

of the young fruit, which is broad at the base and somewhat suddenly contracted a little way beneath the calyx-segments. The mature fruit neither he nor I have had an opportunity of examining.

Mr. J. G. Baker writes that Mr. James Backhouse, who used to botanize with Mr. Robson, tells him that he doubts if there was more than a single bush known of R. spicatum, so that it is probably an accidental sport rather than a true variety. The plant supposed to be R. spicatum from between Piers Bridge and Gainford, Durham, Mr. Backhouse believes to have been R. petræum (Sm.); he considers the latter truly wild in England, but the R. rubrum as an arctic Scandinavian race, not indigenous in Britain.

R. petræum (Wulfen), which is a native of the Alps and Pyrenees, has the calyx-limb much more concave and the segments of the leaves more acute, and is quite distinct from the plant supposed to be R. petræum by Smith.

Wild Red Currant.

SPECIES IV.—RIBES NIGRUM. *Linn.*

PLATE DXXIII.

Branches unarmed. Leaves scented, angular, 5-lobed, subglabrous but with resinous glands beneath; segments deltoid or ovate-deltoid, rather blunt, irregularly crenate-serrate. Flowers perfect, racemose. Racemes sessile, many-flowered, drooping, with the rachis and pedicels pubescent but not glandular. Bracts oblong-lanceolate, shorter than the pedicels. Calyx slightly downy and sprinkled with resinous glands; limb enlarged, bell-shaped. Berries purplish-black.

In woods, thickets, and by the sides of streams. Not uncommon in England and the South of Scotland, but probably most frequently produced from seeds of the garden black currant.

England, [Scotland, Ireland.] Shrub. Spring.

A bush resembling the red currant, but usually larger and stouter, with the leaves larger, and with their lobes more acute. It may be easily recognized by the resinous glands with which the under side of the leaf is sprinkled, and from which the leaf takes its peculiar smell. The flowers are larger, $\frac{3}{8}$ inch across, tinged with dull purple, and have the calyx limb bell- instead of saucer-shaped. The lowest pedicel springs from the base of the rachis of the raceme instead of some way above it. The fruit is larger, black, and with an astringent but less acid flavour.

Black Currant.

French, *Groseille Cassis.* German, *Schwarze Johannisbeere.*

The Black Currant is easily distinguished from the other native species by its strong-scented leaves and black fruit. No varieties are produced from it, and the Black Currant-tree of our gardens is just as it was first known to us in its wild state. It is mentioned by Gerarde, who speaks of it as having flowers of a purplish-green colour, succeeded by fruit as big again as the ordinary Red Currant, "but of a stinking and somewhat loathing savour." The Black Currant is regarded perhaps more as a medicinal fruit than as one for dietetical use, although some persons are very fond of its peculiar flavour. Jelly made from the fruit is esteemed as good for sore throats. The leaves, fruit, and in fact the whole plant, are said to have diuretic qualities. In Siberia the leaves form the principal ingredient in the drink known as *quass;* and the berries being fermented with honey, a powerful spirit is distilled from them. The leaves, when young, are put into spirits, so as to give the liquor a brownish tinge, like that of brandy. An infusion of the roots is given to cattle in Russia as a febrifuge. The leaves are largely employed in the adulteration of tea. They have a flavour somewhat resembling that of green tea, and possess somewhat of the same astringent quality. In Scotland a rob, or jam, is extensively made from Black Currants, which is esteemed as an addition to the whiskey toddy there so much liked. Lozenges made from the juice are sold in some quantities, and are pleasant and useful in pectoral complaints. In Russia the Black Currant-tree is more highly esteemed than with us, and there it is often forced in pots for the sake of the fragrance of its leaves. In planting, Dr. Neill says it produces most fruit as a standard, but the largest berries when trained to a wall.

ORDER XXXI.—CRASSULACEÆ.

Succulent herbs, or shrubs with fleshy stems. Leaves alternate, opposite or verticillate, simple, undivided, generally fleshy, exstipulate. Inflorescence commonly corymbose-cymes, the branches of which are racemose with unilateral flowers, sometimes recurved in bud. Flowers generally perfect, regular, yellow, red, white, purple or greenish. Calyx persistent, of 5 or 4 (more rarely 3 to 30) sepals, more or less united at the base, imbricated in æstivation. Corolla of as many petals as there are sepals, without claws, inserted on the base of the calyx, imbricated in æstivation. Stamens as many as the petals or twice as many, inserted with the petals or adnate to their base; filaments subulate or linear; anthers introrse. Ovaries equal in number to the petals and opposite to them, with a hypogynous scale at the base of each, distinct or rarely more or less united; ovules generally numerous, in 2 rows; styles continuous with the backs of the ovaries, short, persistent, stigmatiferous at the apex on the inner side. Fruit of as many follicles as there are carpels, opening by the inner suture when they are distinct. Seeds generally numerous, anatropous, with a membranaceous often loose testa; albumen fleshy; embryo straight, in the axis of the albumen.

GENUS I.—TILLÆA. *Linn.*

Calyx of 3 or 4 sepals united at the base. Corolla of 3 or 4 petals free from each other. Stamens 3 or 4. Hypogynous scales at the base of the carpels very minute or none, or linear. Follicles as many as the petals, distinct, 2- or many-seeded.

Small annuals, growing in damp places, with opposite frequently connate leaves and generally dichotomously branched stems. Flowers axillary, sessile or stalked, very small, white or rose-colour.

This genus of plants was named in honour of Michael Angelo Tilli, M.D., F.R.S., born 1653. He was Professor of Botany at Pisa, and author of "Horti Pisani Catalogus," 1723, with fifty plates. It contains a few rare plants, observed by him in his voyages to Constantinople and Tunis.

SPECIES I.—TILLÆA MUSCOSA. *Linn.*

PLATE DXXIV.

Stems decumbent, branched at the base. Flowers axillary, sessile, solitary, trimerous, rarely tetramerous.

In sandy places. Rare. Found near Plymouth (Mr. Archer Briggs); in Dorset; Hants (Dr. Bromfield); also in Norfolk and Suffolk.

England. Annual. Early Summer.

Stems ½ to 2 inches long, slender, lying on the ground at the base, ascending at the apex, generally forming small tufts, leafy and floriferous throughout. Leaves very small, opposite, connate, slightly thickened, concave, oval, rather obtuse and apiculate. Flowers very minute, with 3 reddish acuminate sepals, 3 slender white petals, 3 stamens and 3 pistils. Follicles contracted in the middle, each with 2 minute seeds. Plant glabrous, usually reddish.

Mossy Tillæa.

French, *Tillée Mousse.* German, *Moosartige Tilläe.*

GENUS II.—SEDUM. *Linn.* (*D. C.*).

Calyx of 5 (rarely 4, 6, or 8) sepals, more or less united at the base. Corolla of 5 (more rarely of 4, 6, or 8) petals, free from each other. Stamens twice as many as the petals (*i. e.* commonly 10), rarely only as many. Hypogynous scales at the base of the carpels short, oval, entire or emarginate. Follicles as many as the petals, distinct, many-seeded.

Herbs, or more rarely undershrubs, usually branching from the base, with alternate more rarely opposite or verticillate fleshy leaves which are generally crowded on the barren shoots. Flowers in terminal corymbose cymes, with unilaterally-racemose often scorpioid branches, rarely in terminal and lateral glomerules, yellow, rose-colour, purple or white. Though 5 is the normal number of petals in most of the species, yet there are very often one or more flowers in each cyme with 6 parts.

The name of this genus of plants comes from *sedeo*, I sit, referring to its manner of growth upon stones, rocks, walls, and roofs of houses.

Section I.—TELEPHIUM. *Koch.*

Perennial. Rootstock thickened, branched, many-headed, producing numerous flowering-stems simple below, with no creeping or procumbent barren shoots. Leaves flat or slightly concave. Stems annual, appearing in spring and perishing in autumn.

Species I.—**SEDUM RHODIOLA.** *D. C.*

Plate DXXV.

Rhodiola rosea, *Linn.* *Sm.* Eng. Bot. No. 508.

Leaves sessile, alternate, crowded, flat, oblanceolate or obovate-oblong, acute or acuminate, dentate towards the apex. Flowers dicœcious, in very compact terminal corymbose cymes. Calyx 4-partite. Petals 4. Stamens 8. Follicles 4.

On rocks and in stony places, principally in sub-alpine situations. On mountains in Wales, in Yorkshire, the Lake district, the Cheviots, and plentiful in the Scottish Highlands, descending to the sea-shore near Fast Castle, Berwick, and in the North of Scotland; on Benbulben, the Donegal mountains, and other places in the North of Ireland.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock much thickened, fleshy, branched, covered with grey rind, and with brownish scales round the base of the stem and buds. Stems numerous, erect, 3 to 18 inches high, fleshy, thickly clothed with ascending glaucous leaves, which increase in size and are more thickly placed towards the upper part of the stem, where they are from 1 to 1½ inch long. Flowers yellow, sometimes tinged with purplish-red, ⅕ inch across. Calyx-segments strapshaped-lanceolate, often purplish. Petals strapshaped-elliptical, much longer in the

male than in the female flowers, from which they are sometimes entirely absent. Pistils rudimentary in the male flowers, often turning dull purplish-red in the female. Follicles connivent, with a short spreading beak, $\frac{3}{8}$ inch long. Plant pale-green, glabrous and glaucous; leaves fleshy.

Rose-root.

French, *Orpin à odeur de Rose.* German, *Rosenwurz.*

The root of this pretty plant has a pleasant rose-like odour; when freshly broken, the perfume is delicious, and it retains this scent for some weeks. In Greenland the leaves are used for salads, and are also applied in cataplasms for headaches by the peasantry.

SPECIES II.—SEDUM TELEPHIUM. *Linn.*

PLATES DXXVI. DXXVII.

Leaves sessile or narrowed into a very short petiole, alternate (rarely opposite), scattered, flattish or slightly concave, oblong-oval, oblong-obovate or oblong-oblanceolate, irregularly dentate or dentate-serrate, often entire at the base, obtuse at the apex. Flowers perfect, in fasciculate cymes, of which several are arranged in a dense terminal corymb, and in large examples a few additional ones are produced beneath this corymb, from the axils of the leaves a little way down the stem. Calyx 5-partite. Petals 5. Stamens 10. Follicles 5.

Live-long or Everlasting Orpine.

The specific name is derived from Telephus, the son of Hercules, who is said to have discovered its virtues. The whole plant is mucilaginous, and slightly astringent. It is a popular remedy for diarrhœa and hæmorrhoids. Withering says it is diuretic. Sheep and goats eat it, but horses refuse it. The leaves are sometimes used as a salad.

SUB-SPECIES I.—Sedum purpurascens. *Koch.*

PLATE DXXVI.

S. Telephium, *Sm.* Eng. Bot. No. 1319. *Bab.* Man. Brit. Bot. ed. v. p. 129. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 618.

S. Telephium, var. *α*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 156.

Leaves alternate, very rarely opposite, the lower ones somewhat wedge-shaped towards the base; the upper ones sessile, rounded at the base, but not cordate. Flowers purplish-rose, rarely white. Ovaries slightly flattened and furrowed on the back.

On hedgebanks and in thickets. Not uncommon, and generally distributed, but probably escaped from cultivation in many of its localities.

England, Scotland, Ireland? Perennial. Late Summer and Autumn.

Rootstock thickened, fleshy, producing small parsnip-shaped tubers with a whitish-grey rind. Stems stout, 1 to 2 feet high, erect but often shortly decumbent at the base, unbranched below. Leaves largest and closest about the middle of the stem, where they are $1\frac{1}{2}$ to 3 inches long, the lower ones obovate-oblong, narrowed towards the base, the upper ones regularly oval-oblong and rounded at the base, all sharply dentate-serrate from a little above the base to the apex. Flowers in numerous small corymbose cymes united into a large terminal one $\frac{3}{8}$ inch across. Sepals narrowly lanceolate, speckled with red. Petals thrice as long as the calyx, recurved, whitish suffused with dull purplish-rose. Anthers and ovaries reddish. Follicles connivent, gradually tapering into a rather long beak, about $\frac{1}{3}$ inch long. Plant glabrous; leaves fleshy, slightly glaucous.

Broad-leaved Orpine.

French, *Orpin Porpurin.* German, *Purpurrothe Fetthenne.*

Sub-Species II.—**Sedum Fabaria.** *Koch.*

Plate DXXVII.

"S. purpureum, *Tausch.* Bot. Zeit. Vol. XVII. ii. p. 515," *Koch.*
S. Telephium, var. *β*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 156.

Leaves alternate, both the lower and the upper ones wedge-shaped towards the base and narrowed into a very short indistinct petiole. Ovaries not furrowed on the back.

On rocks, also said to occur in hedges and thickets. Apparently more rare than S. purpurascens. I have seen it from Carnarvonshire, Shropshire, Westmoreland, and have gathered it myself on rocks by the sea-shore at the mouth of Kirkcudbright Bay, which is the only station in which I have observed either of the forms of S. Telephium truly indigenous. One of the forms occurs in Ulster, but I am unable to say whether it be S. purpurascens or S. Fabaria.

England, Scotland, Ireland? Perennial. Summer and Early Autumn.

Extremely like S. purpurascens, of which it may be merely a variety. It is, however, more slender and smaller in all its parts, the leaves considerably narrower, deeper green, the flowers more highly coloured; the petals are said to be spreading, and not recurved: but this is not the case in any of the fresh specimens which I have examined. The stamens are attached to the petals a little higher up than in S. purpurascens, and the ovaries are rather shorter.

The figure is drawn from a fresh cultivated specimen sent by

Mr. J. G. Baker, who obtained the root from Skybarrow Craig, Westmoreland.

Narrow-leaved Orpine.

French, *Orpin Fêvier.* German, *Gebirgs Fetthenne.*

Section II.—CEPÆA. *Koch.*

Annual or biennial. Rootstock none or slender. Stem solitary, simple or branched, without creeping or procumbent barren shoots at the base. Leaves flat or swollen.

SPECIES III.—SEDUM VILLOSUM. *Linn.*

Plate DXXVIII.

Biennial. Flowering-stems simple or branched, without barren shoots. Barren shoots only on plants of the year, erect, terminating in a rosette. Leaves oblong-linear, thickened, semicylindrical, not spurred at the base. Flowers white, in an irregular forked corymbose cyme with imperfectly scorpioid branches. Petals ovate-acute. Whole plant glandular-pubescent.

In damp places, particularly by roadsides, in hilly districts in the North of England and Scotland; very common in all the upland districts of the latter country.

England, Scotland. Biennial. Summer and Autumn.

Flowering-stems 3 to 6 inches high. Leaves scattered on the flowering-stem, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, flattish above, convex beneath, not produced at the base. Flowers few, terminating the stem and branches, $\frac{1}{4}$ inch across, white tinged with pale purple. Sepals ovate, blunt. Petals twice or thrice as long as the calyx. Follicles abruptly truncate with a rather short straight beak, $\frac{1}{6}$ inch long, purple. Whole plant pale yellowish-green, often tinged with purple.

Readily distinguishable from all the other British species of Sedum, except S. dasyphyllum, by being covered with short glandular hairs.

This species produces the first year barren shoots with a rosette of leaves at the apex; in the second season these shoots grow out into flowering-stems, and perish in the autumn.

Hairy Stone-crop.

French, *Sedum Velu.* German, *Drusenhaarige Fetthenne.*

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Section III.—EU-SEDUM.

Stem producing perennial procumbent or creeping barren shoots as well as flowering-stems, the latter decaying each year, but the former remaining. Leaves more or less swollen.

Species IV.—SEDUM ALBUM. *Linn.*

Plate DXXIX.

Stems branched, producing numerous procumbent rooting barren shoots at the same time as the flowering ones. Leaves rather approximate on the barren shoots, more distant on the flowering portion of the stem, oblong-cylindrical or clavate-cylindrical, flattened above, convex beneath, not spurred at the base on the lower side, green, glabrous or nearly so. Flowers white, numerous, in a terminal much-branched corymbose cyme; branches of the cyme and pedicels glabrous.

Sub-Species I.—Sedum teretifolium.* *Haw.*

Plate DXXIX. (Fig. 1.)

S. album, var. *α*, *Bab.* Man. Brit. Bot. ed. v. p. 130.

Leaves on the barren shoots rather distant except at the apex, oblong-cylindrical, considerably flattened above; those on the flowering portions distant, spreading or reflexed. Sepals oval, obtuse. Petals oblong-lanceolate, obtuse.

On walls and rocks. Rare, and probably not native except in the West of England, where it is said to be truly wild on the Malvern Hills, Gloucestershire, and in Somersetshire.

England. Perennial. Late Summer.

Barren stems decumbent at the base, producing numerous rooting barren shoots, varying in length according to situation; flowering-stems 4 to 10 inches high. Leaves about ½ inch long, very slightly clavate, very succulent. Flowers ½ inch across, white. Sepals concave, green. Petals twice as long as the sepals, boat-shaped, pure white. Anthers yellowish. Pistils green or pink. Carpels obliquely acuminated into a long beak. Whole plant bright green, glabrous or with the stems slightly glandular.

White Stone-crop.

French, *Sedum Blanc.* German, *Weisse Fetthenne.*

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* Named S. cu-album on the plate.

SUB-SPECIES II.—**Sedum micranthum.** *Bast.*

PLATE DXXIX. (FIG. 2.)

S. album, var. *β*, *Bab.* Man. Brit. Bot. ed. v. p. 130.

Leaves on the barren shoots approximate, clavate-cylindrical, short, slightly flattened above; those on the flowering portions of the stem rather approximate, ascending or spreading. Sepals roundish. Petals oblong, rather acute.

On walls and rocks. Rare, and probably not native. At Arundel and elsewhere, Sussex; and on rocks at Hawl-bowline Island, Cork Harbour. (Mr. Isaac Carroll.)

[England, Ireland.] Perennial. Summer.

Extremely like S. eu-album, but one-half smaller in all its parts. Leaves seldom more than $\frac{1}{4}$ inch long, more swollen and clavate than in S. eu-album; the flowers also are smaller, often tinged with pink; the sepals shorter; the petals longer in proportion, and more acute; the stem more glandular.

I have seen this alive only in Mr. H. C. Watson's garden, the root having been sent to him by the late Mr. Borrer. S. micranthum represents S. album in the Linnæan Herbarium.

French, *Orpin à petites fleurs.*

SPECIES V.—**SEDUM DASYPHYLLUM.** *Linn.*

PLATE DXXX.

Stems tufted, much branched, producing very numerous decumbent rooting barren shoots at the same time as the flowering ones. Leaves mostly opposite, imbricated towards the apex of the barren shoots, more distant on the flowering ones, ovate-ovoid or sub-globose, flattened above, convex beneath, not spurred at the base, glaucous and sometimes tinged with pink, thickly clothed with gland-tipped hairs. Flowers white, few, in a forked cyme with sub-scorpioid branches; branches of the cyme and pedicels generally glandular-pubescent.

On walls and rocks. Rare, and perhaps not truly native, though it is reported from numerous localities from Somerset and Hants to North Wales and Cambridge, also at Sandy's Well, Cork.

England, Ireland. Perennial. Summer.

Stems much-branched at the base, with numerous barren shoots ascending at the apex, where the leaves are very closely imbricated. Flowering shoots 1 to 3 inches high, with the leaves larger than in the barren shoots, about $\frac{1}{6}$ to $\frac{1}{4}$ inch long, broadly

ovate, about half as thick as wide, often speckled with rose-coloured dots; those on the barren shoots opposite, entirely glaucous-green, pitted, all clothed with short gland-tipped hairs. Flowers $\frac{1}{3}$ inch across, white. Sepals ovate, acute, glandular. Petals oblong-oval, flattish, acute, often streaked on the outside with rose-colour. Anthers reddish. Pistils green, often tinged with rose and dotted with red. Carpels acuminated into a rather long beak.

Thick-leaved Stone-crop.

French, *Sedum à Feuilles épaisses.* German, *Berufte Fetthenne.*

SPECIES VI.—SEDUM ANGLICUM. *Huds.*

PLATE DXXXI.

Stems tufted, much-branched, producing very numerous, decumbent barren shoots below the flowering ones. Leaves alternate, crowded, imbricated on the barren shoots, more distant on the flowering ones, ovate-ovoid or oblong-ovoid, slightly flattened above and convex beneath, produced downwards at the base into a slight blunt rounded spur not applied to the stem, green, glabrous. Flowers white, few, in a forked cyme, with sub-scorpioid branches; branches of the cyme and pedicels glabrous.

On rocks and in dry sandy ground, especially near the sea. Rather local, being common on the west coast, but appearing only here and there on the south and east coasts as far north as Forfar and Elgin; and occasionally inland, as on the Ochill Hills, near Dollar, Clackmannanshire.

England, Scotland, Ireland. Perennial. Summer and Autumn.

This species grows in dense matted tufts, with the procumbent part of the stem very slender and creeping. Leaves much crowded, especially on the barren shoots, $\frac{1}{6}$ to $\frac{1}{4}$ inch long, much less swollen than in S. dasyphyllum, and further differing in having a blunt spur or protuberance at the base on the under side: but this spur is not applied to the stem as in the species next following, which it resembles in the leaves being green and not glandular-pubescent. Flowering-shoots 1 to 6 inches long, decumbent, ascending at the apex. Flowers $\frac{1}{3}$ inch across, white tinged with pink, in a forked cyme, usually with 2 scorpioid branches with 3 or 4 flowers each, and another flower in the fork. Sepals ovate-obtuse, glabrous. Petals lanceolate, keeled beneath, acute. Anthers purple. Pistils pink. Follicles acuminated into a rather short beak. Plant frequently tinged with reddish.

English Stone-crop.

French, *Sedum d'Angleterre.*

SPECIES VII.—SEDUM ACRE. *Linn.*

PLATE DXXXII.

Stems tufted, much-branched, producing very numerous decumbent rooting barren shoots below the flowering ones. Leaves crowded and densely imbricated in about 6 spirally-longitudinal rows on the barren shoots, more distant and ascending on the flowering ones, ovate-ovoid or oblong-ovoid, slightly flattened above and convex beneath, produced downwards at the base into a short rather acute spur applied to the stem, green, glabrous. Flowers few, in a forked cyme with sub-scorpioid branches, yellow, sub-sessile. Sepals oval-obtuse, slightly produced downwards at the base like the leaves. Petals lanceolate, acute, spreading. Follicles swollen at the base on the inner side.

In sandy places and on rocks. Very common, and generally distributed, especially near the sea, though by no means confined to its vicinity. It is reported as occurring in Orkney, but I have not myself seen it there.

England, Scotland, Ireland. Perennial. Summer.

This plant grows in large tufts; when not in flower it bears much resemblance to S. Anglicum, but the spur of the leaves being applied to the stem will readily distinguish it when not in flower. The leaves also are more narrowed towards the point, and commonly smaller, rarely above $\frac{1}{8}$ inch long, though sometimes in the more lax forms they attain $\frac{1}{4}$ inch. Flowers $\frac{3}{8}$ inch across or more, bright golden-yellow, arranged in a forked cyme like those of S. Anglicum. Petals more than twice as long as the sepals, spreading, slightly curved backwards. Follicles at length spreading like a star. Plant bright-green tinged with yellowish-red towards the base.

Biting Stone-crop, or Golden Moss.

French *Sedum Acre.* German, *Scharfe Fetthenne.*

The common English names for this plant speak of its biting acrid qualities. In country districts it is called Ginger, or Prick Madam; and it is also known as Wall-Pepper. Gerarde tells us that it was known in his day as Mousetail, or Jack-of-the-Butterie. The bright-yellow starlike flowers of the Stone-crop are often seen covering cottage roofs and old walls, and its biting taste is familiar to most country folks. In large doses it is emetic and cathartic, and applied externally it produces blisters. In some scorbutic diseases it is considered to be a beneficial remedy when properly and carefully used. Pliny recommends it as a means of procuring sleep; for which purpose he says it must be wrapped in a black cloth, and placed under the pillow of the patient without his knowing it, otherwise it will be ineffectual.

SPECIES VIII.—SEDUM SEXANGULARE. *Linn.*

PLATE DXXXIII.

S. Boloniense, *Lois.* *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 626.

Stems laxly tufted, much-branched, producing numerous decumbent rooting barren shoots below the flowering ones. Leaves rather crowded, in about 6 spirally-longitudinal rows on the barren shoots, at the termination of which they form a tuft or imperfect rosette; more distant and ascending-recurved on the flowering-shoots, cylindrical, scarcely flattened above or beneath, produced at the base into a short acute scale-like spur applied to the stem. Flowers yellow, sub-sessile, rather numerous, in a corymbose cyme, with 2 to 4 (generally 3) sub-scorpioid branches. Sepals oblong-cylindrical, obtuse, not produced downwards at the base. Petals linear-lanceolate, acute, spreading. Follicles not swollen at the base on the inner side.

On walls, but not native, though it has been reported from several of the English counties. I have only seen it from Sydenham, Kent, and Malham, Yorkshire.

[England.] Perennial. Summer.

Stems procumbent, producing numerous rather elongated barren tufts, with the leaves rather distant below, but crowded towards the apex, which terminates in a compact rosette. Flowering-stems erect, 3 to 6 inches high, sometimes branched towards the top. Leaves $\frac{1}{4}$ inch long, nearly the same width and thickness throughout, curved just above the base, and with the apices spreading at right angles to the stem; spur more acute than in S. acre, thinner and somewhat scale-like. Flowers $\frac{3}{8}$ inch across, with the petals narrower in proportion than in S. acre; the carpels are also less spreading than in that species. The ripe seeds, which I have not seen, are said by Grenier and Godron to be tuberculated.

S. sexangulare is represented in the Linnæan Herbarium by the lax form of S. acre.

Insipid Stone-crop.

French, *Sedum à Six Angles.* German, *Scharfe Fetthenne.*

SPECIES IX.—SEDUM REFLEXUM. *Linn.*

PLATES DXXXIV. DXXXV.

Stems very laxly tufted, much-branched, producing numerous decumbent barren shoots rooting at the base and erect at the apex below the flowering-shoots. Leaves rather crowded, in

about 7 very irregularly-spiral longitudinal lines on the barren shoots, at the termination of which they form a tuft or imperfect rosette, more distant and reflexed or spreading on the flowering-stems, cylindrical, scarcely flattened above or beneath, subulate at the apex, produced at the base into a short rather blunt scale-like spur applied to the stem. Flowers generally bracteate, yellow, shortly stalked, numerous, in a corymbose cyme, with several usually forked scorpioid branches, which are recurved when in flower, and spreading or spreading-ascending in fruit. Sepals oblong-cylindrical, somewhat acute, not produced downwards at the base. Petals strap-shaped, acute, spreading.

Sub-Species I.—Sedum eu-reflexum.

Plate DXXXIV.

S. reflexum, *Sm.* Eng. Bot. No. 695. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 626.
S. reflexum, var. *a*, *Bab.* Man. Brit. Bot. ed. v. p. 130.

Leaves green, those on the flowering-stem reflexed. Flowers bright yellow.

On walls, dry banks, and house-tops, rarely on rocks. Not uncommon, but having little claim to be considered a true native, unless in Denbighshire and Ireland, where it is said to grow on rocks.

England ? [Scotland,] Ireland ? Perennial. Summer.

Barren stems elongated, lying on the ground, sending up numerous ascending or erect elongated barren shoots and erect or somewhat flexuous flowering-stems, 9 inches to 1 foot high. Leaves $\frac{1}{2}$ to $\frac{3}{4}$ inch long, distant towards the base of the barren shoots, but crowded towards the apex, where they form a tuft rather than a rosette. Flowers bright yellow, very often 6-merous, nearly $\frac{1}{2}$ inch across. According to Mons. Crepin (Notes sur Pl. Rares ou Crit. de la Belgique, Fascicule I. p. 11), the stamens have transparent hairs at the base, and carpels are rugose on the inner side ; but I have not found these characters constant in the specimens which have come under my observation.

S. septangulare (*Haworth*) has been found at Winscombe, Somerset, by Mr. Lloyd : it appears, from a dried specimen I have seen, to be merely a luxuriant form of S. eu-reflexum, such as it often assumes when cultivated.

Yellow Stone-crop.

French *Sedum réfléchi.* German, *Zurückgekrümmte Fetthenne.*

In Holland the leaves and young shoots of this species are used for salads, and are probably wholesome in small quantities, though they partake of the acridity of the wall-pepper.

Sub-Species II.—Sedum albescens. *Haworth.*

Plate DXXXV.

S. reflexum, β albescens, *Bab.* Man. Brit. Bot. ed. v. p. 130.
S. glaucum, *Sm.* Eng. Bot. No. 2477.

Leaves glaucous, those on the flowering-stems not reflexed. Flowers pale yellow. Plant smaller in all its parts, and with the leaves, especially on the barren shoots, more slender than in sub-species I.

On dry rough banks. Rare. About Mildenhall, Suffolk; also from Babbicombe, Devon.

England. Perennial. Summer.

The Mildenhall plant, which is the only one I have seen, I have received from Dr. J. A. Power. This has the barren shoots short, 1 to 2 inches long, the flowering-stems 4 to 6 inches high, the leaves $\frac{1}{4}$ to $\frac{1}{2}$ inch long, the flowers $\frac{1}{4}$ inch across; in other respects it agrees with S. eu-reflexum.

Glaucous Stone-crop.

Species X.—SEDUM RUPESTRE. *Huds.*

Plates DXXXVI. DXXXVII.

Stems laxly tufted, much-branched, producing numerous decumbent barren shoots, rooting at the base and erect at the apex, below the flowering-shoots. Leaves crowded, in about 14 very irregularly-spiral longitudinal lines on the barren shoots at the termination of which they form a rosette, more distant and spreading or ascending on the flowering-stems, strap-shaped, flattened above and beneath, acuminate or mucronate at the apex, produced at the base into a short obtuse or acute scale-like spur applied to the stem. Flowers generally without bracts, yellow, shortly stalked, numerous, in a corymbose cyme, with several usually forked sub-scorpioid branches, which are spreading-ascending when in flower, and connivent in fruit. Sepals oval, rather blunt, not produced downwards at the base. Petals strap-shaped, rather acute.

Sub-Species I.—Sedum elegans. *Lej.*

Plate DXXXVI.

S. rupestre, *Sm.* Eng. Bot. No. 270. *Bab.* Man. Brit. Bot. ed. v. p. 131. *Hook. & Arn.* Brit. Fl. ed. viii. p. 157.

Leaves glaucous. Cyme rather flat-topped.

Var. α, *majus*.

Stems stout. Leaves $\frac{3}{4}$ to 1 inch long. Flowering-stems 9 inches to 1 foot high. Branches of the cyme $1\frac{1}{2}$ to 2 inches long.

Var. β, *minus*.

S Forsterianum, *Leight.* Fl. Shrop. p. 195 (non *Smith*).

Stems more slender. Leaves $\frac{3}{8}$ to $\frac{5}{8}$ inch long. Flowering-stems 4 to 9 inches high. Branches of the cyme $\frac{3}{4}$ to 1 inch long.

On rocks. Var. α on Cheddar Cliffs; var. β on St. Vincent's Rocks, Bristol; in Wales, Shropshire, and as an escape from gardens, on walls and dry banks in many counties besides.

England, [Scotland,] Ireland. Perennial. Summer.

This plant closely resembles S. reflexum, the variety α equalling it in size; but it may be always readily recognized by the flattened and more pointed leaves in many more longitudinal rows. Var. β, the form commonly cultivated, has the leaves at the apex of the barren shoots arranged in rosettes, open when moist, but closed into a mass like a fir-cone when the plant begins to flag from a continuance of dry weather. When growing in damp places, or where the climate is moist, the leaves on the barren shoots below the terminal rosette remain; but in a dry atmosphere they soon wither and fall off, leaving only the rosette. The flowers are considerably smaller than in var. α, in which they are nearly as large as in S. reflexum; the stems in both α and β are generally purplish-red. The flowers are seldom bracteated, as is usually the case in S. reflexum. Var. *majus* has its barren stems bearing some resemblance to young shoots of Linaria purpurea.

In the Linnæan Herbarium S. rupestre is represented by a specimen of the South European S. amplexicaule.

Rock Stone-crop.

Sub-Species II.—Sedum Forsterianum. *Sm.*

Plate DXXXVII.

S. aureum, *Wirt.* Fl. Rhein. Prov. p. 184. *Crepin*, Notes sur Pl. Rares ou Crit. de la Belgique, Fasc. II. p. 22.

Leaves green. Cymes roundish-topped. Plant more slender than in S. elegans.

On damp rocks and about waterfalls. Rare. In West Somerset and Wales.

England. Perennial. Summer.

Very like var. β of S. elegans, but a smaller and more delicate-looking plant, with the leaves bright-green, falling off more readily, and leaving only the terminal rosette; the flowers also are smaller, and the branches of the cyme shorter, sometimes so short that the cyme looks like a head.

There are two forms of this,—one, apparently much the more common (Craig Breidden, Montgomery; Stanner, Radnor, &c.), which grows in ordinary garden soil; the other, which Mr. H. C. Watson received from Mr. Borrer as S. Forsterianum, from Wales, is a more slender plant than the first, and can only be induced to grow by keeping it constantly damp.

Dr. Wirtgen lays stress on the shape of the spur to separate his S. aureum from S. Forsterianum; but this is an inconstant character, as different forms may be seen on the same plant.

Forster's Stone-crop.

GENUS III.—SEMPERVIVUM. *Linn.*

Calyx of 6 to 20 sepals, united at the base. Corolla of 6 to 20 petals, united for a little way at the base to each other and to the filaments, rarely entirely free from each other. Stamens twice as many as the petals, in 2 rows, but half of them frequently sterile. Hypogynous scales at the base of the carpels toothed or cut at the apex. Follicles as many as the petals, many-seeded.

Herbs, often with very compact flattened barren rosettes of oblong fleshy leaves, or in many exotic species fleshy shrubs. Flowers yellow, rose-colour, purple, or white, in corymbose or paniculate cymes, with unilateral-flowered scorpioid branches.

The name of this genus of plants expresses their tenacity of life. *Semper vivo*, "to live for ever," is truly its name; and this property is shared by the whole of the House-leek tribe.

SPECIES I.—SEMPERVIVUM TECTORUM. *Linn.*

PLATE DXXXVIII.

Stem producing barren shoots from the axils of the lowest leaves. Barren shoots consisting of regular rosettes on naked stalks. Leaves flat, very fleshy, oblong or oblanceolate-oblong, acuminate and somewhat mucronate, ciliated, otherwise glabrous. Flowering-stem erect, simple, glandular-pubescent, with distant leaves, of which the upper ones are glandular-pubescent. Flowers shortly stalked, in a corymbose cyme or a corymbose-topped panicle, with scorpioid branches. Calyx-segments 12, strapshaped-lanceolate, acute, divided two-thirds of the distance to the base, glandular-pubescent. Petals strapshaped, acuminate, much longer than the

sepals, ciliated and pubescent. Hypogynous scales extremely small, convex, resembling glands.

On roofs and old walls. Not uncommon, but not native.

[England, Scotland, Ireland.] Perennial. Summer.

Rosettes 2 to 4 inches across. Flowering-stems 9 inches to 2 feet high, thick, with the leaves $1\frac{1}{2}$ to 2 inches long. Flowers $\frac{3}{4}$ to 1 inch across, dull rose streaked with purple, and the petals with a green keel on the outside. The 12 inner stamens frequently converted into pistils, or abortive. Follicles dull rose-colour.

Common House-leek.

French, *Joubarbe des Toits.* German, *Dach Hauslauch.*

The appearance of this curious plant is familiar to us all, as it covers the roofs of time-worn cottages or battered castle-walls. The thick succulent leaves enable the plant to retain vitality even in the driest weather, acting as reservoirs of moisture. We have seen, in old-fashioned farm-houses, pleasant fresh-looking fireplace-screens, or chimney-boards, lasting the summer through, made by these plants inserted into a frame of cross-bars of wire or wood, so that their roots are towards the grate, and their closely-arranged disks towards the room, the whole surface being occasionally sprinkled with water. The House-leek possesses a very popular reputation as a remedy in cuts and bruises, burns and scalds. Boerhaave gave the juice for dysentery. It is sometimes mixed with cream or milk for external application. With honey it was at one time considered a good remedy for the thrush in children, being applied with a hair-pencil. The House-leek had several names in olden times,—such as Sengreen or Aggreen, both translations of Sempervivum. It was also called Jupiter's Beard, Jupiter's Eye, and Bullock's Beard : in Scotland it is termed Fouets. In Gerarde's time the medical reputation of the House-leek was at its height. He tells us that "the juice mixed with barly meale and vineger prevaileth against St. Anthonies fire, all hot burnings and fretting ulcers, and against scaldings, burnings, and hot inflammations, and also the gout comming of an hot cause." "The juice of House-leeke," says he, "garden nightshade, and the buds of poplar boiled in hog's grease, make the most singular populeon that ever was used in surgerie. The juice hereof taketh away cornes from the toes and feet, if they be washed and bathed therewith, and every day and night, as it were, emplaistered with the skin of the same Houseleeke, which certainly taketh them away without incision or suchlike, as hath been experimented by my verie good friend Mr. Nicholas Belson, a man painful and curious in searching forth the secrets of nature."

In the days of superstition, the House-leek was supposed to protect the buildings on which it grew from lightning. Charlemagne ordered it to be planted on the roof of every house, probably with this view, and the custom still prevails both in England and on the Continent, though the only service it can render is possibly to preserve the thatch on cottage roofs : its pretty and picturesque appearance, with its rosy-tipped leaves, in such situations cannot be questioned.

GENUS IV.—COTYLEDON. *Linn.*

Calyx of 5 (or 4) sepals, united at the base. Petals united into a bell-shaped or cylindrical corolla, which is 5- (or 4-) toothed

at the apex. Stamens twice as many as the petals, inserted on the tube of the corolla. Hypogynous scales at the base of the carpels, oblong or oval-obtuse. Follicles as many as the petals, distinct.

Herbs or fleshy shrubs with various habit. The only British species is remarkable for its fleshy peltate slightly concave leaves and long dense secund racemes or panicles of yellowish pendulous or spreading flowers.

This genus of plants is named in allusion to the cup-like leaves of some of the species: from κοτυλη, a cavity.

SPECIES I.—COTYLEDON UMBILICUS. *Linn.*

PLATE DXXXIX.

Umbilicus pendulinus, *D. C.* Plant. Grass. Tab. 156, and Prod. Vol. III. p. 400. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 294. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 630.

Lower leaves stalked, peltate, sub-rotund, depressed in the centre, repandly-crenate, fleshy; lowest stem-leaves resembling the radical ones, the intermediate spathulate, the upper ones wedge-shaped. Bracts minute, entire. Flowers shortly stalked, drooping, more rarely only spreading, in a long simple somewhat unilateral raceme, which has generally a few racemose branches towards the base. Corolla cylindrical, with 5 or 4 ovate-deltoid acuminate teeth.

On old walls and rocks, and stony hedge-banks. Common in the West of the island, but rare and sporadic in the East.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock a small roundish tuber, varying according to the size of the plant, from the dimensions of a small pea to that of a large nut. Stem 3 inches to 2 feet high, erect, but generally decumbent for a greater or less distance at the base. Radical leaves on stalks 2 to 6 inches long, the lamina 1 to 3 inches across, succulent, slightly hollowed out above, and gradually swelling into the petiole beneath. Leaves on the stem passing by intermediate gradations from those of a round peltate form into very shortly-stalked obovate or wedge-shaped ones. Raceme occupying the greater part of the length of the stem, bearing very numerous pale yellowish-green flowers about $\frac{3}{8}$ inch long, lengthening to $\frac{1}{2}$ inch after flowering. Pedicels longer than the calyx. Sepals one-fourth the length of the corolla, lanceolate-acuminate. Filaments included, adhering to the tube of the corolla for the greater part of their length. Hypogynous scales flat, oblong, emarginate. Follicles connivent. Plant pale bright-

green, glabrous. The flowers are sometimes 4-merous and 5-merous in the same raceme, but the latter are much more numerous.

Common Navel-wort.

French, *Cotylédon Ombilic.*

This curious little plant is applied by the peasantry in Wales to the eyes as a remedy in some diseases; and by the herb doctors of the West of England it is recommended in epilepsy, but with about as much efficacy as most such prescriptions. Its use as a remedy in epilepsy was recently revived in legitimate medicine, but it has obtained no permanent reputation as a remedy.

EXCLUDED SPECIES.

SEDUM CEPÆA. *Linn.*

Naturalized on a bank near Denham, Bucks, where it was discovered by Mrs. James. I have not seen the station, nor ascertained whether the plant be still found there.

SEDUM STELLATUM. *Linn.*

Naturalized on a bank by the late Mr. Borrer's garden, near Henfield, Sussex. See Phyt. v. (1854), p. 47.

SEDUM ANOPETALUM. *D. C.*

A Sedum sent to Mr. H. C. Watson by Mr. Borrer as S. elegans from Jersey appears to belong to this species; but the plant is now dead, and only a dried specimen remains. Possibly there may have been some mistake about the locality of this, as Mr. Borrer mentions (Phyt. v. (1854), p. 47) that he had what he believed to be S. anopetalum from Devonshire, and that the Jersey Sedum was different.

COTYLEDON LUTEA. *Huds.*

E. B. 1522.

Said to have been found in the West Riding of Yorkshire by Tofield; and Hudson says he saw it himself in Mr. Clement's garden, to which it was alleged to have been brought from Somersetshire. No doubt the first was an error for C. Umbilicus, and the second a mistake as to the place from whence the garden plant had been obtained. Rev. W. W. Newbould informs me that there is no specimen of C. lutea in Tofield's herbarium.

ORDER XXXII.—SAXIFRAGACEÆ.

Herbs, or more rarely trees or shrubs, with alternate or opposite or rarely verticillate simple or compound leaves, which are rarely fleshy; in the herbaceous genera the radical leaves are generally in rosettes. Stipules none in the herbaceous forms, present but deciduous in the shrubby ones. Inflorescence various, often in paniculate or corymbose cymes. Flowers perfect, regular, of various colours, but most commonly white. Calyx of 4 or 5 (rarely more or fewer) sepals, which are distinct or more or less united together, with the tube free from or partially or wholly united to the ovary. Petals as many as the sepals, inserted on the calyx, sometimes absent. Stamens as many or twice as many as the petals, rarely indefinite or fewer than the petals, inserted in the throat of the calyx; anthers introrse. Ovary either free from the calyx or adnate to its tube, commonly of 2, more rarely 3 to 5 or more carpels partially or wholly united, 1-celled with parietal placentæ, or with as many cells as there are carpels and the placentæ in the axis; ovules generally numerous; styles distinct, or more or less united. Fruit a dry capsule, with septicidal or more rarely loculicidal dehiscence. Seeds anatropous; albumen fleshy, rarely absent.

Sub-Order I.—SAXIFRAGEÆ.

Herbs, with the stipules absent or wholly adnate to the petiole. Calyx free, or adherent to the ovary. Petals imbricated, rarely convolute in the bud. No nectariferous deeply-divided scales. Stamens perigynous.

GENUS I.—SAXIFRAGA. *Linn.*

Calyx of 5 sepals, with the tube more or less adhering to the ovary, more rarely free; limb 5-cleft or 5-partite, imbricated in æstivation. Corolla of 5 petals, inserted on the tube of the calyx, entire. Stamens 10, very rarely 5; anthers 2-celled, opening longitudinally. Styles 2, rarely more. Capsule adnate to the calyx at the base, more rarely free, of 2 (or rarely more) carpels, partially united by their inner sutures so as to form a 2-beaked fruit 2-celled at the base, opening by a hole between the diverging beaks. Placentæ on the dissepiment. Seeds numerous, with the testa tight over the nucleus.

Herbs or undershrubs, with alternate or rarely opposite leaves and flowers variously disposed, white, yellow, rose-colour, or purple.

The generic name of these plants seems to be in allusion to their supposed medical virtues, and to come from the words *saxum*, a stone, and *frangere*, to break.

Section I.—PORPHYRION. *Tausch.*

Stems elongated, perennial, leafy. Leaves small, opposite, persistent, thickened towards the apex, where there are 1 to 3 pores at first covered with deciduous calcareous scales, ciliated with the ciliæ not articulated to the margin of the leaf. Flowering-shoots short, annual. Sepals cohering to the middle, erect, free, or adnate to the ovary, purple, rarely yellow.

Species I.—SAXIFRAGA OPPOSITIFOLIA. *Linn.*

Plate DXL.

Stems much branched, prostrate. Leaves crowded, opposite, 4-farious, oblong-oblanceolate, thickened and obtuse at the apex. Flowers terminal, solitary, sub-sessile. Calyx free from the ovary; segments ciliated, with the ciliæ not glandular. Petals obovate, rose-lilac fading to purple. Stamens shorter than the corolla. Seeds oblong-triquetrous, rugose.

On the damp ledges of alpine rocks. Rare in Merioneth, Carnarvon, Yorkshire, and Cumberland. Common in the Scotch Highlands.

England, Scotland, Ireland. Perennial. Summer.

Stems much-branched, prostrate, reddish-brown, with the leaves generally crowded, especially towards the apex of the shoots. Leaves about $\frac{1}{4}$ inch long, recurved towards the apex, somewhat cartilaginous, mostly with fascicles of leaves or abbreviated shoots in their axils, ciliated with thick white hairs, which seem to be a production of the substance of the leaf itself, slightly channelled above nearly to the apex, which is marked with usually a single pore. Flowering-shoots $\frac{1}{2}$ to 1 inch long, with the leaves crowded or distant. Flowers $\frac{1}{2}$ inch across, bell-shaped, pale reddish-purple, but losing some of the red tinge as they fade. Calyx-segments broadly-ovate, obtuse. Petals oval-obovate, scarcely acute, with a central nerve giving off two opposite branches near the base, and these lateral nerves dividing into 2 a little way above their origin. Capsule $\frac{1}{4}$ inch long (exclusive of the beaks), ovate-ovoid, terminating in 2 long diverging beaks. Seeds reddish-brown. Plant deep-green, glabrous.

Purple Mountain Saxifrage.

French, *Saxifrage à Feuilles opposées.* German, *Gegenblättriger Steinbrech.*

This pretty plant decks the higher districts of the Welsh and Scotch mountains, as it does the higher Alps, from whence we received it as a precious garden plant long before it was known to be a native of our own land. Its beauty caused it eagerly to be sought after, and it is now regularly sold in Covent Garden market as an early spring flower.

Section II.—MICRANTHES. *Tausch.*

Acaulescent, with the leaves in a radical rosette, without barren shoots. Scape annual, leafless. Flowers small, generally crowded, in compact cymes. Calyx adhering to the ovary at the base.

SPECIES II.—SAXIFRAGA NIVALIS. *Linn.*

Plate DXLI.

Rootstock unbranched. Leaves all radical, spathulate, with the lamina roundish or oval, crenate or crenate-serrate, ciliated with glandular hairs, contracted into a broad-channelled petiole. Stems erect, simple, naked or very rarely furnished with a single strap-shaped leaf. Flowers few, in capitate few-flowered cymes; cymes all approximate, or the lowest cyme removed from the others. Bracts elliptical or strap-shaped, longer than the pedicels. Sepals united halfway up, and adhering for that distance to the ovary; segments erect, ovate-oblong. Petals half as long again as the sepals, persistent, oblanceolate. Capsule ovate-ovoid, terminating in 2 short beaks.

On damp alpine rocks, particularly those of mica-slate. Rare. On Snowdon; Highcap Scar in Westmoreland; and on the mountains of Clova, Forfarshire; Breadalbane, Perth; Aberdeenshire, and the Isle of Skye.

England, Scotland, Ireland. Perennial. Late Summer.

Rootstock rather thick, unbranched, terminating in a rosette of leaves. Leaves, including the petiole, $\frac{1}{2}$ to 3 inches long, of which the lamina is $\frac{1}{4}$ to 1 inch (but the substance of the two is so similar that it is difficult to say where the one begins and the other ends); crenatures with callous tips. Scapes 2 to 6 inches high, generally solitary, produced from the base of the rosette, clothed with glandular articulated hairs, terminated by a compact head of few subsessile cymose branches, or more rarely with the lowest branch produced a little way down the stem and stalked. Flowers $\frac{1}{4}$ inch across, white. Sepals often tinged with purplish. Petals with 2 greenish dots towards the base. Pistil dark purple. Leaves sub-coriaceous, rather thick, dull-green, generally red or purple beneath. Plant

glabrous, except the margins of the leaves and bracts, scape, and pedicels, which have glandular hairs.

Alpine clustered Saxifrage.

French, *Saxifrage des Neiges.* German, *Schnee Steinbrech.*

Section III.—ROBERTSONIA, *Haworth* (including ARABIDIA, *Tausch*).

Leaves mostly in radical rosettes. Barren shoots short, also forming rosettes. Flowering-stems annual, leafless, or with a few alternate leaves. Flowers in paniculately-arranged cymes. Sepals nearly free from each other and from the ovary, reflexed or more rarely spreading. Petals white, with 2 yellow spots at the base of each, and sometimes red dots on the surface. Capsules superior, or nearly so.

Species III.—SAXIFRAGA STELLARIS. *Linn.*

Plate DXLII.

Rootstock branched. Leaves in radical lax rosettes, oblanceolate, wedge-shaped at the base, coarsely and remotely toothed towards the apex. Scapes leafless, rarely with a single leaf. Flowers in lax few-flowered cymes, combined into a panicle, which is corymbose at the top, with few branches. Bracts strap-shaped, much shorter than the pedicels. Sepals almost free from each other and from the ovary, reflexed, lanceolate-oblong. Petals twice as long as the sepals or more, elliptical, contracted at the base into conspicuous claws. Filaments subulate. Capsule wholly superior.

On damp rocks and wet places by the sides of rills. Common in mountainous districts. In Wales, the North of England, and on all the high hills in Scotland.

England, Scotland, Ireland. Perennial. Summer.

Rootstock many-headed, each head terminating in a rosette, with the lower leaves remote; barren shoots similar to the flowering ones but smaller. Leaves $\frac{1}{2}$ to 2 inches long, tapering to the base but without an evident petiole, ciliated, and with remote scattered hairs on the upper surface. Scapes 2 to 9 inches high, thinly clothed with short hairs, branched at the top, each branch terminating in a cyme of from 1 to 3 flowers. Flowers $\frac{3}{8}$ inch across, white. Petals with 2 yellow spots at the base. Anthers and generally the pistils red. Capsule $\frac{1}{4}$ inch long exclusive of the beaks, which are short and

but slightly diverging. Leaves somewhat succulent, rather thin, pale bright-green.

Starry Saxifrage

French, *Saxifrage Étoilée.*

SPECIES IV.—SAXIFRAGA GEUM. *Linn.*

PLATES DXLIII. DXLIV. DXLV.

S. hirsuta, *Gr. & Godr.* Fl. de Fr. Vol. I. p. 639.

Rootstock branched. Leaves in lax radical rosettes; lamina roundish-reniform, cordate or sub-cordate at the base, crenate or crenate-serrate or dentate-serrate; petioles elongate, slender, rarely short and rather broad. Scape leafless. Flowers in lax cymes, which are combined into an elongate panicle with numerous branches. Bracts strap-shaped, much shorter than the pedicels. Sepals free from each other and from the ovary, oblong, reflexed. Petals twice as long as the sepals or more, oblanceolate-elliptical. Filaments slightly dilated upwards. Capsule wholly superior.

Var. *α*, *crenata.*

PLATE DXLIII.

Leaves crenate, with the crenatures blunt or almost truncate, distinctly and deeply cordate at the base, not at all narrowed into the long slender petiole.

Var. *β*, *serrata.*

PLATE DXLIV.

Leaves crenate-serrate or dentate-serrate, more or less distinctly cordate at the base, not at all attenuated into the long slender petiole.

(?) Var. *γ*, *elegans.*

PLATE DXLV.

S. elegans, *Mack. Bab.* Man. Brit. Bot. ed. viii. p. 133.

Leaves acutely serrate, scarcely cordate at the base, shortly and very abruptly attenuated into the rather short somewhat dilated petiole.

Var. *α* in woods, but only where planted; as in Collinton Woods, Edinburgh; Dysart Woods, Fife; the Isle of Arran, in Scotland; and near Thorpe Arch, Yorkshire. Var. *β* not uncommon on hills in the South-west of Ireland. Var. *γ* on the

top of Turk Mountain, Killarney; Connor Hill and the Gap of Dunloe, Kerry.

[England, Scotland,] Ireland. Perennial. Summer.

Rosettes of leaves close to the ground or shortly stalked; the leafstalks 1 to 5 inches long; the lamina $\frac{1}{2}$ to 3 inches in diameter, with a cartilaginous margin varying from very bluntly crenate to very sharply serrate, hairy or glabrous. Scapes 2 inches to 1 foot high, bearing a long panicle with rather short lateral branches. Flowers $\frac{1}{4}$ inch across, white. Sepals generally tinged with red. Petals with two yellow spots at the base, and with or without red dots. Anthers reddish. Capsule $\frac{1}{5}$ inch long exclusive of the beaks, which are short and diverging. Leaves deep green, rather thin, their surfaces, petioles, and the scape more or less clothed with glandular hairs.

S. elegans of Mackay is merely a small form of var. β.

Var. γ, of which I have specimens from Dr. W. Andrews, collected in the Gap of Dunloe, is a very puzzling plant, agreeing in some respects better with S. umbrosa than with S. Geum; the leaves are more spreading than in the other forms of the latter, on much shorter and broader petioles, which are enlarged at the apex. On the whole, however, it seems best placed under S. Geum.

Kidney-leaved London-Pride.

French, *Saxifrage Benoite.*

SPECIES (?) V.—SAXIFRAGA HIRSUTA. *Linn.*

PLATE DXLVI.

Rootstock branched. Leaves in lax radical rosettes; lamina oval or roundish-oval, sub-cordate or abrupt at the base, crenate-serrate or dentate-serrate; petioles elongate, slender. Scape leafless. Flowers in lax cymes, which are combined into an elongate panicle with numerous branches. Bracts strap-shaped, much shorter than the pedicels. Sepals free from each other and from the ovary, oblong, reflexed. Petals twice as long as the sepals or more, oblanceolate elliptical. Filaments slightly dilated upwards. Capsule wholly superior.

On mountains in the South-west of Ireland; Gap of Dunloe, Glen Curragh, and Connor Hill, Kerry; Hungry Hill, Cork.

Ireland. Perennial. Summer.

This plant comes very near S. Geum, of which it is probably merely a sub-species, or perhaps even only a variety, the chief difference being that the leaves are longer than broad, and less distinctly cordate at the base; they are also generally more hairy. The flowers

are similar in size, colour, and arrangement, and, like S. Geum, it varies much in the degree of hairiness on the leaves, petioles, and stems.

Hairy London-Pride.

French, *Saxifrage Velue.*

SPECIES VI.—SAXIFRAGA UMBROSA. *Linn.*

PLATES DXLVI. DXLVII.

Rootstock branched. Leaves in compact or lax radical rosettes, spathulate; lamina obovate, oval-oblong or roundish, rather suddenly attenuated at the base, crenate or crenate-serrate or dentate-serrate; petioles short or rather short, broad. Scape leafless. Flowers in lax cymes, combined into an elongate panicle with numerous branches. Bracts strap-shaped or elliptical, much shorter than the pedicels. Sepals free from each other and from the ovary, oblong, reflexed. Petals twice as long as the sepals or more, oblanceolate-elliptical. Filaments slightly dilated upwards. Capsule wholly superior.

Var. α, *genuina.*

PLATE DXLVI.

Leaves spreading, in compact rosettes; lamina oblong-obovate, crenate. Petioles short.

Var. β, *punctata.* Haw.

Leaves ascending, in rather lax rosettes; lamina roundish, obovate-roundish, crenate-serrate. Petioles longer than in var. α.

Var. γ, *serratifolia.*

PLATE DXLVII.

Leaves ascending, in lax rosettes; lamina obovate or oval-obovate, sharply dentate-serrate. Petioles longer than in var. α.

On rocks in mountains. Var. α apparently wild, near Settle, Yorkshire, and naturalized in woods in many places both in Scotland and England. Some of the forms from Kerry approach var. α, but have the petioles longer and the crenatures sharper, and therefore may be more properly referred to vars. β and γ. Var. β common in Connemara, Galway, and not unfrequent near Killarney and other places in the south-west of Ireland. Var. γ in the same localities as var. β.

England? [Scotland,] Ireland. Perennial. Summer.

The extreme forms of this are very different from S. Geum and S. hirsuta, but there seems an imperceptible gradation from the one to the other, and probably they ought to be considered merely as sub-species. The leaves in S. umbrosa are more spathulate, with much broader petioles, which are whitish or very pale-green, not tinged with flesh-colour as in the other two species above named. Professor Babington gives as a distinctive character that the petioles of S. Geum and S. hirsuta are channelled above, while those of S. umbrosa are flat above; but this does not convey a good idea of the difference between them. In S. Geum and S. hirsuta the upper surface of the petiole is flat, but along either edge there is a ledge formed by a line decurrent from the lamina. In S. umbrosa the petiole itself is flat or slightly channelled, but the decurrent edge slopes gradually into it, not standing up like a distinct ridge on each side. The flowers of S. umbrosa are usually a little larger and more often dotted with red, and the red dots are more numerous; the plant is more glabrous, the lamina of the leaves in all the specimens I have seen being quite destitute of hairs, and the midrib is paler.

A form with irregularly doubly-serrate leaves has been found near Killarney, but it appears to be rather a monstrosity than a true variety.

Common London-Pride.

French, *Saxifrage Ombragée.*

The appearance of this pretty plant is well known in all gardens, and it was cultivated as an ornamental addition to our rockeries and flower-borders long before it was recognized as a native plant. Being one of the few pretty flowers that will endure a smoky atmosphere, or flourish in or near our great metropolis, it has been called appropriately London-Pride. Dr. Prior mentions, however, that this name was given to it in reference to a Mr. London, who first brought it into cultivation. It is also sometimes called St. Patrick's Cabbage, and None so pretty.

SPECIES (?) VII.—SAXIFRAGA ANDREWSII. *Harvey.*

PLATE DXLVIII.

Rootstock branched. Leaves in lax radical rosettes, narrowly oblanceolate, gradually and imperceptibly attenuated at the base into the petiole, finely dentate-serrate; petioles short, broad, scarcely separable from the attenuated bases of the leaves. Scape leafless. Flowers in compact long-stalked corymbose cymes, combined into an elongate panicle with numerous branches. Bracts strap-shaped, shorter than the pedicels, which as well as the scape are clothed with gland-tipped hairs. Sepals combined at the base, where they adhere to the base of the ovary, the free portion much longer than the calyx-tube, strap-shaped, oblong, spreading-reflexed. Petals more than twice as long as the sepals, elliptical-oblong. Filaments subulate. Capsule two-thirds superior.

Said to have been found at the head of Glen Curragh, Kerry, by Dr. W. Andrews, and there is a leaf of this plant in Mr. Hewett Watson's herbarium, sent by Dr. Andrews amongst a number of leaves to illustrate the variations in form of S. umbrosa which occur in Ireland.

Ireland? Perennial. Summer.

A very remarkable plant, which appears to be quite intermediate between the Robertsonian Saxifrages and those of the Continental group Aizoon, so that it has been suspected to be a hybrid of garden origin. This supposition derives confirmation from the seeds being, as far as is known, always abortive. The mode of growth is quite similar to that of S. umbrosa; but the leaves are very different, 1½ to 4 inches long, tapering insensibly from near the apex to the base, with a very conspicuous pellucid cartilaginous margin, and with a very distinct pore on each crenature. The flowers are larger than in any of the forms of S. umbrosa, ½ inch in diameter, and they are arranged in more distinctly corymbose cymes at the extremity of the long naked branches of the panicle; the hairs too are gland-tipped, and the sepals adhering to the base and to the ovary, and only very slightly reflexed, give characters which show a nearer approach to the Aizoontes than the Robertsoniæ. The petals are conspicuously dotted with red. The leaves are glabrous, except towards the base from the point where the serratures cease and along the petiole, where they are ciliated with hairs formed by the production of the cartilaginous margin; the pores on the crenatures have not the covering scale distinctly white and crustaceous as in the Aizoontes. Professor Babington, in his "Manual of Botany," places S. Andrewsii in the section without barren shoots at the base: they are, however, nearly similar to and as abundant as those of S. umbrosa.

Andrews' London-Pride.

Section IV.—HIRCULUS. *Gaud.*

Stem leafy, with barren shoots at the base. Leaves narrow, alternate. Sepals nearly free from each other and from the ovary and reflexed, or combined at the base and there adhering to the ovary and spreading. Flowers yellow or white. Hairs continuous with the substance of the leaves.

Species VIII.—SAXIFRAGA HIRCULUS. *Tausch.*

Plate DI.

Stem erect, simple, pubescent in the upper part, densely leafy, emitting from the base slender stolons, which are terminated by

a small tuft or very lax rosette. Lower leaves obovate or oblanceolate, attenuated into a petiole; stem-leaves sessile, elliptical or strap-shaped, entire or faintly callously denticulate, nearly destitute of ciliæ. Flowers terminal, solitary, rarely 2 or more. Sepals free, oblong, obtuse, ciliated, reflexed. Petals three or more times as long as the calyx, oblong, ascending-spreading, bright yellow dotted with red in the basal half, and with 2 callosities at the base. Capsule wholly superior.

In wet moors. Very local. Knutsford Moor, Cheshire; Cotherstone-Fell and Teesdale, Yorkshire; Langton, Berwickshire; Walston, Lanarkshire; Ochill Hills, near Dollar, Clackmannanshire (Dr. Wyville Thomson).

England, Scotland, Ireland. Perennial. Autumn.

Stems branched below ground, and producing close to the surface slender stolons, somewhat resembling those of Epilobium obscurum, except in having the leaves alternate. Stems 3 to 8 inches high, simple below, rarely branched at the top. Root-leaves, including the stalks, $\frac{3}{4}$ to 2 inches long; stem-leaves ascending, $\frac{1}{4}$ to 1 inch long, diminishing in size towards the top of the stem. Flowers $\frac{3}{4}$ inch across. Petals obovate, obtuse, 5-nerved (the central nerve giving off 2 forked branches from a little above the base, as in S. oppositifolia), bright yellow thickly dotted with red towards the base. Stamens shorter than the petals. Capsule, exclusive of the short diverging beaks, $\frac{4}{5}$ inch long, much longer than broad, reddish-brown. The ripe seeds I have not seen, but, according to Grenier and Godron, they are white and shining. Plant yellowish-green, glabrous except the upper part of the stem and sepals, and occasionally a few ciliæ on the margins of the leaves.

Yellow Marsh Saxifrage.

French, *Saxifrage Œil-de-Bouc.* German, *Cistenblumiger Steinbrech.*

This species is well worth cultivation, and grows well in bog-earth kept moist.

SPECIES IX.—SAXIFRAGA AIZOIDES. *Linn.*

PLATE DLI.

S. autumnalis, *Linn.* Sp. Pl. p. 576.

Stems much branched towards the base, many of the branches being stolons or barren shoots, with crowded leaves terminating in a tuft or rosette. Flowering-stem ascending, pubescent, usually branched towards the top. Leaves all sessile, elliptical-strapshaped or strap-shaped, entire, rarely denticulate, remotely ciliated.

Flowers few, in 1- to 3-flowered cymes terminating the stem and branches, which are so disposed as to give a corymbose appearance to the inflorescence. Sepals combined at the base for one-fourth of their length, and adhering for that distance to the ovary, ovate or oblong-ovate, obtuse, glabrous, spreading. Petals once and a half to twice as long as the sepals, elliptical-oblanceolate, bright yellow dotted with red towards the base, without callosities. Capsule two-thirds superior.

In wet places on rocks, and by the sides of rills. Plentiful in mountainous districts, and often descending along the course of streams into the low country. I have myself found it on low ground by the side of the turnpike-road near Durris, Kincardineshire, and at Ascog, Isle of Bute; and Dr. P. W. Maclagan discovered it on rocks on the Ayrshire coast; in all of which places it has not been brought down from high ground by streams.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Flowering-stems 2 to 6 inches long, generally decumbent at the base. Leaves spreading, crowded on the barren shoots and at the base of the flowering-stems, $\frac{1}{2}$ to 1 inch long, generally with a few ciliæ; when these are present, it is the S. autumnalis of Linnæus, and when absent his S. Aizoides. Flowers $\frac{1}{2}$ inch across, varying in the intensity of the yellow colour and in the number of orange or red dots. Capsule nearly as long as broad, scarcely $\frac{1}{4}$ inch either way, olive-colour. Seeds yellowish-brown, rugose. Plant growing in dense masses, bright-green; the stems clothed at the base with persistent decayed brown leaves.

Yellow Mountain Saxifrage.

French, *Saxifrage faux Aizoon.* German, *Traubenblüthiger Steinbrech.*

Section V.—NEPHROPHYLLUM. *Tausch.*

Flowering-stem leafy, without leafy barren shoots at the base. Leaves alternate, often reniform and palmately lobed. Hairs articulated to the stem-leaves. Flowers usually white. Sepals erect or spreading, combined at the base and adhering to the ovary, more rarely nearly free from each other and from the ovary.

Species X.—SAXIFRAGA TRIDACTYLITES. *Linn.*

Plate DLII.

Annual or biennial, without barren shoots. Stem erect, paniculately branched. Lowest leaves indistinctly stalked, broadly

spathulate in outline, palmately 3- or 5-cleft, or the lowest of all sometimes entire; lobes strap-shaped, entire; petioles broad, scarcely exceeding the lamina; upper leaves wedge-shaped, sessile, 3-cleft. Flowers in cymose racemes on the branches of the panicle; pedicels four or five times as long as the calyx in fruit. Bracts mostly opposite, 2- or 3-cleft or strap-shaped. Calyx-tube three or four times as long as the segments, adnate to the ovary, oval-ovoid in fruit. Petals about twice as long as the calyx-segments. Capsule oval-ovoid, wholly inferior, with 2 very short diverging beaks. Plant pubescent with gland-tipped hairs.

On wall-tops and in dry sandy places. Common in England; more rare in Scotland, and there apparently confined to the East coast, where, however, it reaches as far North as Dunrobin, in Sutherland.

England, Scotland, Ireland. Annual or Biennial. Spring.

Stems $\frac{1}{2}$ to 7 inches high, slender, simple or nearly so in small specimens, but branched on those above 1 inch high. Radical leaves in a rosette, usually decaying shortly after the flowers expand; lowest leaves $\frac{1}{4}$ to 1 inch long, the lamina divided into 3 oblong-strapshaped segments, lateral segments forked in the larger leaves. Flowers about $\frac{1}{10}$ inch across, white. Calyx-segments very short, obtuse. Pedicels lengthening in fruit until they are $\frac{1}{2}$ to $\frac{3}{4}$ inch long, very slender, slightly curved inwards. Capsule $\frac{1}{6}$ inch long. Plant dull-green generally tinged with red; the stems, peduncles, calyces, and margins of the leaves with short gland-tipped hairs.

Rue-leaved Saxifrage.

French, *Saxifrage à trois doigts.* German, *Dreifingeriger Steinbrech.*

This plant is sometimes called Nail-grass; and Gerarde remarks: "As touching the qualitie hereof we have nothing to set downe onely it hath been taken to heale the disease of the nailes called a *whitlow*, whereof it tooke his name, as also naile wort." He adds, when summing up the good qualities of the Saxifrages as a family, that they are much used as rennet "in Cheshire where I was borne, and where the best chiese of this lande is made."

SPECIES XI.—SAXIFRAGA RIVULARIS. *Linn.*

PLATE DLIII.

Perennial. Barren shoots represented by oblong-ovoid scaly buds at the crown of the rootstock. Stems decumbent, nearly simple. Lowest leaves longly stalked, reniform in outline, palmately 5-lobed, cordate at the base; lobes oval or roundish, obtuse; petioles slender, many times longer than the lamina; stem-leaves

few, resembling the others, but with shorter petioles. Bracts 3-cleft or entire, opposite or solitary. Flowers solitary, or in a cyme of 2 or 3, on very long pedicels. Calyx-segments ovate, as long as the tube; calyx-tube hemispherical, adhering to the ovary. Petals oblong, exceeding the sepals. Capsule nearly two-thirds superior, exceeding the calyx-segments, with 2 very short beaks. Plant sparingly glandular-pubescent.

On damp ledges of Alpine rocks. Rare. Most abundant on the mountains of Braemar, but also on Ben-Nevis, Ben-Lawers, and also stated to occur in Forfarshire and Moray.

Scotland. Perennial. Summer.

Stems 1 to 3 inches long, growing in small tufts. Petioles of the radical leaves about as long as the stems; lamina $\frac{1}{2}$ to $\frac{3}{4}$ inch across. Flowers white, $\frac{1}{4}$ inch in diameter. Petals varying from a quarter to twice as long as the sepals. Capsule $\frac{1}{4}$ to $\frac{1}{3}$ inch long, suddenly acuminated into 2 short diverging beaks, the superior part with a few prominent transverse veins. Plant dull lurid green, sparingly clothed with long, shaggy, jointed, glandular hairs.

The barren shoots of this plant have the bases of the short leaf-stalks (which are destitute of laminæ) thickened so as to form small bulbs; later in the year some of these shoots may be found elongated, with the scale-like bases of the leaf-stalks more remote, and often bearing the rudiment of a lamina; in which case they have some resemblance to the young subterranean stolons of Epilobium alsinifolium.

Alpine Brook Saxifrage.

SPECIES XII.—SAXIFRAGA CERNUA. *Linn.*

PLATE DLIV.

Perennial. Barren shoots represented by oblong-ovoid scaly bulbs at the crown of the rootstock. Stem erect, simple, curved at the apex before flowering, at length straight. Lowest leaves stalked, roundish-reniform in outline, palmately 5-lobed, cordate at the base; lobes roundish or ovate, subacute; petioles slender, about twice as long as the lamina; stem-leaves numerous, shortly stalked, the lower ones resembling the root-leaves, but with longer and more acute lobes; upper stem-leaves rhomboidal and lobed, the uppermost entire, most of them, especially the uppermost, with scaly bulbs in the axils. Bracts entire, strapshaped, solitary. Flowers solitary, or in a cyme of 2 or 3, on rather short

pedicels. Calyx-segments oval, free nearly to the base, where alone the calyx adheres to the ovary. Petals (very rarely produced in Britain) oblong-oblanceolate, 3 times as long as the sepals. Capsule nearly wholly superior, never observed in Britain. Plant sparingly glandular-pubescent.

On Alpine rocks. Very rare. In a fissure on the south side of Ben-Lawers, very near the summit.

Scotland. Perennial. Summer.

Stems in the Perthshire specimens 2 to 4 inches high, but in the Scandinavian ones frequently 6 to 9 inches; bulbs at its base resembling those of S. rivularis, those in the axils of the leaves more globular. Petioles of the root-leaves $\frac{1}{2}$ to 1 inch long; lamina $\frac{1}{2}$ to $\frac{3}{4}$ inch across; stem-leaves considerably smaller. Flowers $\frac{1}{2}$ inch across, white, but the nearest approach to flowering which I have seen is the production of an empty calyx. The capsule I have never seen. Plant dull-green tinged with olive, the stem and bulbs in the leaf-axils generally dull-red; stem, peduncles, and margins of the leaves sparingly clothed with long, flexuous, jointed glandular hairs.

Drooping Alpine Saxifrage.

SPECIES XIII.—SAXIFRAGA GRANULATA. *Linn.*

PLATE DLV.

Perennial. Barren shoots represented by globular scaly bulbs at the crown of the rootstock. Stem erect, straight, simple or branched. Lower leaves stalked, roundish-reniform, crenate with a few large obtuse crenatures, or slightly palmately 5- or 7-lobed, with the lobes short, oblong or roundish, obtuse; petioles slender, about twice as long as the lamina; stem-leaves few, similar to the root-leaves, but with shorter stalks and lanceolate, more acute lobes, the upper ones rhomboidal, 3-lobed, the uppermost entire, all without bulbs in the axils. Flowers few, in terminal corymbose cymes, which, combined, make the inflorescence a corymbose-topped panicle in luxuriant examples. Calyx-segments ovate, as long as the tube, which adheres to the ovary. Petals oblong-obovate, 3 times as long as the calyx-segments. Capsule half superior, with 2 rather short sub-erect beaks. Plant densely glandular-pubescent.

In meadows and dry banks. Rather common, and generally distributed in England, but becoming scarce in Scotland North of

the Forth and Clyde, and not extending North of Aberdeen and Moray.

England, Scotland, Ireland. Perennial. Spring and early Summer.

Stem erect, 6 to 18 inches high, branched in luxuriant specimens; bulbs at the base much larger and more numerous than in the two preceding species, being as large as peppercorns. Petioles of the root-leaves $1\frac{1}{2}$ to 3 inches long; lamina $\frac{3}{4}$ to $1\frac{3}{4}$ inch across; stem-leaves much smaller. Flowers bell-shaped, $\frac{3}{4}$ inch across, white. Pedicels as long as, or twice as long, as the calyx. Capsule $\frac{1}{3}$ inch long. Plant deep dull-green. Stem, pedicels, calyx, petioles, and margins of the leaves thickly clothed with shaggy jointed glandular hairs.

White Meadow Saxifrage.

French, *Saxifrage Grenne.* German, *Knollentragender Steinbrech.*

Notwithstanding the popular name of the Saxifrages, they really possess no such powers as are attributed to them; and the only way in which they could even have afforded relief to sufferers from calculous diseases must have been by their mucilaginous nature, which may possibly be the case. The granulated roots of our present species, resembling as it were small motes, were confirmations strong to the signature physicians of bygone times of the potency of the plant in calculous complaints, and as its white flowers indicated that it was governed by the moon, its credit remained long unquestioned by such as, led by astrologers, believed that the heavens

> "Shed down their stellar virtues on all plants
> That grow on earth, made thereby after to receive
> Refection from the sun's more potent ray."

Section VI.—DACTYLOIDES. *Tausch.*

Flowering-stem with leafy barren shoots at the base. Leaves on the flowering-stems alternate (rarely none), mostly palmately cleft, with hairs articulated to the margins. Flowers usually white. Calyx with the sepals cohering at the base in a tube which adheres to the ovary.

Species XIV.—SAXIFRAGA CÆSPITOSA. *Linn.*

Plate DLVI.

Barren shoots short, terminating in rosettes, and, together with those at the base of the flowering-shoots, forming dense cushions. Leaves of the rosettes wedge-shaped, attenuated into winged petioles; lamina slightly dilated, 3- or 5-cleft, with oblong parallel-sided lobes, rounded at the apex, those on the flowering-stem few, the lowest ones resembling those of the rosette, with

the petiole much shorter or indistinct; the uppermost and the bracts entire, strapshaped. Flowering-stems terminating in a few-flowered corymbose cyme. Calyx-segments oblong-ovate, blunt, as long as the calyx-tube; calyx-tube in fruit half oval-ovoid, longer than broad. Petals obovate, twice as long as the calyx-segments, or more. Capsule one-third superior. Stems, pedicels, calyces, and margins of the leaves with short gland-tipped hairs.

On Alpine rocks. The only specimens I have seen that I can refer to this species is one in Mr. Borrer's herbarium at Kew, collected by the late Mr. Joseph Woods on Ben-Nevis; and one or two in that of Mr. H. C. Watson, from Ben-Avon, on the confines of the counties of Aberdeen and Banff, gathered by Dr. Martin Barry. The S. "cæspitosa" from Ben-na-bourd is also likely to be the true plant, but I have not seen specimens from that locality.

Scotland. Perennial. Summer.

Stems, exclusive of the flowering portion, 1 to 2 inches long, rather thinly clothed with decayed leaves at the base, then thickly clothed with decayed leaves, and, lastly, with a compact rosette of green leaves, which are $\frac{3}{8}$ to $\frac{3}{4}$ inch long, with the segments $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Flowering-stems 1 to 4 inches long, with few leaves unbranched except in large specimens, and then only towards the apex. Flowers 1 to 5, on pedicels generally shorter than the calyx in the terminal flower and longer in the lateral flowers of the cyme, $\frac{3}{8}$ inch across, white. Sepals very blunt, erect or slightly recurved at the points, frequently tinged with purple. Capsule $\frac{1}{4}$ to $\frac{3}{8}$ inch long, more than half of it adhering to the calyx, the segments of which rise above the point where the division between the two short sub-erect beaks commences. Plant clothed with very short hairs tipped with globular glands.

The true S. cæspitosa of the Linnæan Herbarium appears to be an Arctic or sub-Arctic plant, frequent in Scandinavia, Iceland, Greenland, &c., but not occurring in Germany. S. Iratiana, F. Schultz (S. Grönlandica, D. C.), which occurs on the Pyrenees, appears to be a sub-species of the present plant, differing in the shorter, more rigid, and more spreading leaves, the dead ones remaining attached, so that the divisions of the rootstock resemble bottle-brushes; the leaves also are thicker in consistence, and their segments are more spreading, and generally more numerous; the sepals are generally tinged with a deeper purple; the petals are shorter and broader, and the gland-tipped hairs on the plant considerably longer; the calyx-tube in fruit is shorter and more swollen at the base.

Tufted Saxifrage.

SPECIES (?) XV.—SAXIFRAGA DECIPIENS. *Ehrh.*

PLATE DLVII.

S. cæspitosa, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 301, et *Anct. Angl.* *Sm.* Eng. Bot. No. 794, and S. palmata, *Sm.* Eng. Bot. No. 455.
S. pubescens, *Sternb.* *Roth*, Enum. pars i. Sect. post. p. 256.

Barren shoots short, terminating in rosettes, and, together with those at the base of the flowering-shoots, forming dense cushions. Leaves of the rosettes wedge-shaped, attenuated into winged petioles; lamina dilated, 3- to 7-cleft, with oblong abruptly acuminated lobes, blunt at the apex; those on the flowering-stem few, similar to those of the rosettes. Bracts linear, entire, strapshaped. Flowering-stems terminating in a few-flowered corymbose cyme. Calyx-segments ovate, blunt, as long as the calyx-tube; calyx-tube in fruit hemispherical, about as broad as long. Petals obovate, $2\frac{1}{2}$ to 3 times as long as the calyx-segments. Capsule half superior. Stems, pedicels, and calyces clothed with short gland-tipped hairs, intermixed with a few jointed ones; petioles with much longer shaggy, jointed, glandular hairs.

On Alpine rocks. On Cwm Idwell and Twll Dhu, Carnarvonshire, North Wales, probably also on the mountains of Kerry; but I have seen no native specimens except those from Wales in Smith's Herbarium.

England, Ireland? Perennial. Summer.

Very like S. cæspitosa, and sometimes as small, but the flowering stems occasionally attain the height of 9 or 10 inches. Leaves with the lobes more divergent, less perfectly parallel-sided. Calyx-tube rather shorter in proportion in flower, and much shorter in fruit, so that a less portion of the capsule is adherent to the calyx-tube. The pubescence, especially on the leaves, has the hairs longer and much more distinctly divided by cross partitions into numerous joints, and the foliage is of a lighter colour, but it is only in fruit that the difference between the two plants is very conspicuous.

Dr. Walker Arnott (Brit. Fl. ed. viii. p. 163) points out the difference between the S. cæspitosa of British authors and the Arctic plant; but he appears to have seen no British specimen of the latter.

I am strongly inclined to consider S. decipiens merely a subspecies of S. hypnoides, from which it differs only in the leaf-lobes and calyx-segments being blunt, and the plant of a paler (slightly glaucous) green.

Palmate-leaved Mossy Saxifrage.

SPECIES XVI.—SAXIFRAGA HYPNOIDES. *Linn.*

PLATES DLVIII. to DLXII.

Barren shoots generally elongated and decumbent or procumbent, terminating in tufts or rosettes, and with the rosettes at the base of the flowering shoots forming dense cushions. Leaves of the rosettes wedge-shaped, attenuated into winged petioles; lamina dilated, 3- to 7-cleft, with oblong acuminate or lanceolate lobes, acute at the apex; those of the barren shoots 3-cleft or entire; those on the flowering-stem few, the lowest 3- or 5-cleft, the uppermost and the bracts entire. Flowering-stems terminating in a few-flowered corymbose cyme. Calyx-segments ovate or triangular, acute or rather acute, rather longer than the calyx-tube; calyx-tube in fruit hemispherical, about as broad as long. Petals obovate, 2 to 3 times as long as the calyx-segments. Capsule half superior. Stem, pedicel, and sepals more or less thickly clothed with short gland-tipped hairs; barren shoots and leaves with elongated jointed glandular hairs.

SUB-SPECIES I.—Saxifraga hirta. *Don.*

PLATES DLVIII. to DLX.

Barren shoots generally short when the plant is in flower, with the leaves 3-cleft, lobes strapshaped, suddenly acuminate beyond the middle, and acute at the apex. Calyx-segments ovate-triangular or lanceolate-triangular, subacute. Stem, pedicels, and calyces clothed with gland-tipped hairs.

Var. α, *genuina.*

PLATE DLVIII.

S. hirta, *Bab.* Man. Brit. Bot. ed. v. p. 134. *Sm.* Eng. Bot. No. 2291.

Petals obovate, flat. Sepals ovate-triangular. Glandular hairs numerous.

Var. β, *affinis.*

PLATE DLIX.

S. affinis, *Don.* *Bab.* Man. Brit. Bot. ed. v. p. 134, and E. B. S. No. 2903.

Petals oblong, inflexed at the sides. Sepals "subulate" (Bab.). Glandular hairs few.

Var. γ, *incurvifolia.*

PLATE DLX.

S. incurvifolia, *D. Don*, Trans. Linn. Soc. Vol. XIII. p. 423.
S. cæspitosa, γ incurvifolia, *Bab.* E. B. S. No. 2909, and Man. Brit. Bot. ed. v. p. 134.

Segments of the leaves incurved, sometimes obtuse; sepals rather obtuse.

On Alpine rocks. Var. α on the summit of Brandon Mountain and at Hag's Glen, Kerry, and on Galtee-more, Tipperary; also said by Mr. G. Don to be found in the West of Scotland; var. β and var. γ on the summit of Brandon Mountain, with var. α.

Scotland (?) Ireland. Perennial. Summer.

Plant growing in lax tufts. Barren shoots 1 to 4 inches long at the time the plants flower. Leaves with a broad petiole, expanding gradually towards the lamina, which is dilated and deeply 3-lobed, with the lateral lobes simple or 2- or 3-cleft, the lobes and segments nearly parallel-sided almost to the apex, where they are abruptly pointed. Leaves on the flowering-stems few, 3-cleft. Bracts elliptical, entire. Flowering-stem 3 to 8 inches high, 1- to 5-flowered. Flowers ½ inch across, white. Plant more or less thickly clothed with gland-tipped pubescence.

The S. affinis is said to differ by having subulate sepals and petals incurved at the sides; but specimens in the herbarium at Kew, and in that of the Linnæan Society, collected by Professor Babington, appear to me identical with those labelled S. hirta, on the same authority, and contained in the same herbaria. In the Smithian herbarium, however, there is a plant, sent apparently by Dr. Mackay, which agrees better with the characters assigned to S. affinis, having the sepals narrower and the pubescence much less abundant than in the ordinary S. hirta.

Of var. γ I know nothing except from the plate in "Eng. Bot. Suppl.," which is again given here. Professor Babington and Dr. Mackay consider it a variety of S. cæspitosa (S. decipiens, Ehrh.); Mr. Bentham and Mr. H. C. Watson regard it as a form of S. hirta, and Dr. Walker Arnott is uncertain to which of the two it ought to be referred. If the drawing be accurate, I think there can be no doubt that it is rightly placed under S. hirta.

SUB-SPECIES II.—Saxifraga eu-hypnoides.

PLATES DLXI. DLXII.

Barren shoots generally elongate when the plant is in flower, with the leaves 3-cleft or entire; lobes (or the leaf itself if not lobed) linear lanceolate, acuminated from below the middle, very acute or

mucronate at the apex. Calyx-segments triangular, acute. Stem sub-glabrous; pedicels and calyces sparingly clothed with very short gland-tipped hairs, margins of the leaves usually with elongate articulate hairs.

Var. α, *platypetala.*

Plate DLXI.

S. platypetala, *Sm.* Eng. Bot. No. 2276, and S. elongella, *Sm.* Eng. Bot. No. 2277.

Leaves of the barren shoots at the time of flowering 3-cleft, very rarely with axillary buds, and terminating in an imperfect rosette.

Var. β, *gemmifera.*

Plate DLXII.

S. hypnoides, *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 653.

Leaves of the barren shoots at the time of flowering mostly undivided, the greater number of them with buds in their axils and the shoot terminated by a similar but larger bud; buds spindle-shaped, consisting of undivided aristate leaves, with scarious margins, closely packed over each other.

On mountains and damp banks in hilly districts. Common, and generally distributed in all the mountainous districts of the country.

England, Scotland, Ireland. Perennial. Summer.

Barren shoots trailing, 2 to 6 inches long. Leaves distant when lobed, with the lobes tapering nearly from the base when simple, the leaf enlarging a little beyond the middle, where the division of the lobes would be if the leaves were divided, and then diminishing to the acute apex. Flowering-stems 2 to 7 inches high, with a few 3-cleft leaves towards the base, and some entire ones near the apex. Flowers $\frac{1}{2}$ inch or more across, white.

This plant comes very near S. hirta, but the barren shoots are more slender, more procumbent, with the leaves narrower below the point where the lobes commence; the lobes less parallel-sided and more acute, the flowering-stem more slender and its leaves narrower, the sepals narrower and more acute, the whole plant with fewer gland-tipped hairs.

The extreme states of varieties α and β are strikingly different, but the transition from the one to the other is so gradual, that it appears to be impossible to draw any defining line between them.

GENUS II.—CHRYSOSPLENIUM. *Linn.*

Calyx-tube united to the ovary; limb with 4 or 5 obtuse lobes, coloured within. Petals none. Stamens 8 or 10 (twice as many as the calyx-segments), inserted at the edge of an epigynous disk. Styles 2. Capsule obovate, compressed, 1-celled, notched at the summit, splitting to the middle into 2 flat valves; placentæ parietal. Seeds numerous, with a crustaceous testa.

Perennial succulent herbs, with the stems frequently dichotomous. Leaves stalked, opposite or alternate, crenate. Flowers yellow, shortly stalked, in cymose glomerules, arranged in a leafy flat corymbose cyme.

The name of this genus is compounded from the words χρυσος, gold, and σπλην, the spleen, in reference to the golden colour of the flowers, and the supposed virtue of the plant in diseases of the spleen.

SPECIES I.—CHRYSOSPLENIUM OPPOSITIFOLIUM. *Linn.*

PLATE DLXIII.

Stems branched, decumbent, rooting at the lower joints. Leaves opposite, roundish, repandly crenate, truncate at the base and suddenly contracted into a petiole not exceeding the length of the lamina.

In damp places in woods, by the side of ditches and streams, and on wet rocks. Generally distributed, but rare or local in the South, common in the North.

England, Scotland, Ireland. Perennial. Spring.

Rootstock slender, creeping, passing insensibly into the creeping base of the stem. Stem fragile, succulent, with opposite branches especially towards the base; branches and flowering portion of the stem ascending. Leaves in numerous pairs; lamina ½ to 1 inch in diameter; petiole scarcely so long as the lamina. Flowering-shoots 3 to 6 inches high, with 1 or 2 pairs of leaves, terminating in a dichotomous flat corymbose cyme. Flowers ⅛ inch across. Calyx-segments ovate, generally 4 in number, more rarely 5, green on the outside, yellow within. Capsule two-thirds inferior, with 2 short erect beaks. Seeds reddish-brown. Plant dull-green, the lower part of the stem and upper surface of the leaves clothed with transparent white hairs.

Opposite-leaved Golden Saxifrage.

French, *Dorine à Feuilles opposées.* German, *Gegenblättriges Milzkraut.*

SPECIES II.—CHRYSOSPLENIUM ALTERNIFOLIUM.

Linn.

PLATE DLXIV.

Stem simple, erect, not rooting at the lower joints. Leaves chiefly radical, those on the stem alternate; radical and lower stem-leaves roundish-reniform, deeply cordate at the base, deeply crenate; crenatures at the apex of the leaf very large, truncate, those towards the base rounded; petioles exceeding the lamina; upper stem-leaf truncate at the base, which is abruptly attenuated into a petiole about the length of the lamina.

In damp places in woods, by the sides of ditches and streams, and on wet rocks. With the preceding species, but much less frequent.

England, Scotland, Ireland. Perennial. Spring.

This species bears a superficial resemblance to C. oppositifolium, being similar in size and colour, though the latter is generally rather deeper. The stems, however, do not creep and branch above ground as in that plant; the radical leaves are on stalks 1 to 4 inches long, the lamina $\frac{3}{4}$ to 2 inches across, deeply heart-shaped, and much more deeply crenate; stem-leaves rarely more than 2, alternate. The bracts are shorter and broader, usually deeper yellow within; the flowers are very similar, but with the calyx-segments broader and brighter yellow. The upper part of the stem and bracts is glabrous, as in C. oppositifolium.

Alternate-leaved Golden Saxifrage.

French, *Dorine à Feuilles alternes.* German, *Wechselblättriges Milzkraut.*

SUB-ORDER II.—PARNASSIEÆ.

Herbs without stipules. Calyx nearly free from the ovary. Petals imbricated in the bud. Nectariferous scales opposite the petals, divided at the apex into long gland-tipped segments resembling a number of filaments. Stamens only slightly perigynous.

GENUS III.—PARNASSIA. *Tournef.*

Calyx of 5 persistent sepals, more or less united at the base, and adhering to the ovary only at the very base. Petals 5, at length deciduous, with simple veins, somewhat perigynous. Nectariferous scales 5, opposite the petals, with 3 to 13 setæ united at the base; the threads or divisions with glands at the apex.

Stamens 5, alternate with the petals; anthers 2-celled, dehiscing longitudinally. Ovary 1-celled, with 4 (rarely 3) parietal placentæ, and with 4 sessile stigmas opposite the placentæ. Ovules very numerous, opposite the placentæ. Capsule 1-celled, 4-valved, loculicidal. Seeds numerous, with a loose reticulated membranous testa produced so as to form a wing, ex-albuminous.

Perennial herbs, growing in bogs, with the leaves mostly radical, stalked, ovate-roundish or reniform. Stem with a single leaf, or none, terminating in a solitary large white erect flower.

An anomalous genus, which is usually placed with Drosera, with which it appears to have no very close relation. Don, Batsch, Lindley, and Röper placed it in Hypericaceæ, regarding the nectariferous scales as the equivalents of the bundles of stamens in that order; but the leaves are not opposite or dotted. Bartling placed it in Tamariscaceæ; Reichenbach considered it near Gentianaceæ; Agardh thought it allied to Podastemon and Lentibularia.

This genus of plants is supposed to be possessed of so much grace and beauty, it originally grew around the abode of the Muses: hence its name, from the hill of Parnassus.

SPECIES I.—PARNASSIA PALUSTRIS. *Linn.*

PLATE DLXV.

Radical leaves numerous, on long stalks, roundish-ovate, cordate; stem-leaf 1, similar to the radical leaves, sessile, amplexicaul, or absent. Flowers solitary, terminal. Nectariferous scales fringed with 9 to 13 slender gland-tipped filaments.

In bogs. Rather frequent and generally distributed. Common in Scotland and the North of England, extending to Orkney.

England, Scotland, Ireland. Perennial. Autumn.

Radical leaves numerous, on stalks 2 to 4 inches long; lamina $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, entire, more or less deeply cordate at the base. Stems solitary or numerous, rather wiry, angular, twisted, 3 to 14 inches high, usually with a single amplexicaul leaf below the middle. Flowers erect, $\frac{3}{4}$ to $1\frac{1}{4}$ inch in diameter, white, with strongly-marked veins. Sepals ovate-lanceolate. Petals roundish-ovate, slightly concave, spreading. Scales $\frac{1}{2}$ as long as the petals, the upper portion consisting of numerous slender filaments tipped with a yellowish globular gland. Stamens with very short and broad filaments. Pistil globular, with 4 stigmas. Capsule globular, a little attenuated towards the top, $\frac{3}{8}$ to $\frac{1}{2}$ inch long. Plant glabrous, rather pale-green.

Grass of Parnassus.

French, *Parnassie des Marais.* German, *Sumpf Herzblatt.*

This elegant plant is worth the attention of those who love to surround themselves with things of beauty. Plunged into water in a garden-pot, it will continue in blossom for many weeks, care being taken that it be removed originally with a ball of its native earth around its roots.

EXCLUDED SPECIES.

SAXIFRAGA COTYLEDON. *Linn.*

"Mr. Wright had seen another Saxifrage, allied to S. Aizoon, wild on rocks at Crossthwaite, Westmoreland, for which he showed me as the same species S. Cotyledon, planted on a wall by Troutbeck Bridge. We visited each of these places in vain."—(Borrer, in Phyt., Vol. II., 1846, p. 429.)

SAXIFRAGA ROTUNDIFOLIA. *Linn.*

"Was found a few years ago among the rocks in the vale of Newlands (Cumberland), but has since been searched for in vain." (G. S. Gibson, in Phyt., Vol. II., 1846, p. 377.)

SAXIFRAGA SIBTHORPII. *Boiss.* et *Sprun.*

This species, often cultivated in gardens under the name of S. Cymbalaria, was found by Mr. W. Bennett near the Crinan canal, Argyleshire.

SAXIFRAGA PEDATIFIDA. *Sm.*

E. B. 2278.

Said to have been found by Mr. Don on rocks by the head of Clova; also reported to have been gathered in the Isle of Achill, by Mr. J. Wynne; but there seems to be no satisfactory evidence of the latter being the true plant.

SAXIFRAGA MUSCOIDES. *Wulf.*

E. B. 2314.

Said to have been found in Westmoreland and the Highlands of Scotland, but not confirmed by recent observations.

ORDER XXXIII.—UMBELLIFERÆ.

Herbs, generally with hollow furrowed stems; more rarely undershrubs. Leaves alternate, very rarely opposite, frequently ternately- or pinnately-compound or -decompound, without distinct stipules, but usually with the leaf-stalk dilated at the base, especially in the uppermost leaves. Inflorescence usually a compound umbel (*umbel*), with the primary rays bearing small simple umbels (*umbellules*), more rarely a simple umbel; umbels usually surrounded by whorls of small leaves (*involucres*) and umbellules (*involucels*) by similar whorls. Flowers perfect or polygamous (more rarely all unisexual), regular, or radiant by having the outer petals of the exterior flowers larger, generally white, yellow, or greenish. Calyx of 5 sepals, completely combined and adnate to the ovary, with the limb reduced to a ring, more rarely 5-toothed. Petals 5, frequently with the apex inflected so as to appear notched, inserted round a fleshy disk which crowns the ovary. Stamens 5. Ovary adherent to the calyx, crowned with a fleshy epigynous disk, divided into 2 cushions (*stylopods*), 2-celled, each cell with a solitary suspended ovule; styles 2, distinct. Fruit (*cremocarp*) 2-celled, generally separating when ripe into 2 achenia (*mericarps*), which are most commonly suspended from a more or less deeply cleft or entire *columella*, sometimes termed the *carpophore*. Each mericarp has usually 5 ridges or ribs (*primary ridges*), and sometimes 4 intermediate ones (*secondary ridges*); generally there are also, in the substance of the pericarp, small canals or tubes (*vittæ*) containing essential oil. Seed anatropous; albumen copious, horny; embryo minute.

Tribe I.—HYDROCOTYLEÆ.

Flowers generally in simple umbels or heads, or in 2 or more whorls one above the other. Petals entire, acute, valvate. Cremocarp laterally compressed, without calyx-teeth at the apex; columella none; mericarps convex or keeled on the back; primary ridges usually unequal, the intermediate ones often obsolete and the lateral ones remote from the margin, the secondary ridges none; interstices without vittæ. Seed flat or keeled on the inner side.

GENUS I.—HYDROCOTYLE. *Linn.*

Calyx-limb obsolete. Petals ovate-lanceolate, entire, acute, generally hooded but not inflexed at the apex. Cremocarp laterally compressed, sub-didymous; mericarps without vittæ, with 5 filiform ridges, of which the intermediate ones are the most prominent, the lateral ones often and the keel sometimes obsolete.

Herbs, often aquatic, with the leaves simple, roundish, frequently peltate. Umbels irregular, few-flowered, or the flowers in whorls.*

The name of this genus is derived from two Greek words, ὑδωρ (*hydor*), water, and κοτυλη (*kotule*), a cavity, in reference to the hollow cup-like form of the leaves, which hold moisture, and the situations in which it delights to grow.

SPECIES I.—HYDROCOTYLE VULGARIS. *Linn.*

PLATE DLXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1842.
Billot, Fl. Gall. et Germ. Exsicc. No. 2853.

Stem creeping, rooting at the nodes. Leaves stalked, sub-orbicular, peltate, crenate. Peduncles springing from the nodes of the stem, terminating in a simple head-like umbel of 3 to 6 flowers, generally with 1 or 2 (rarely 3) whorls of flowers beneath it. Fruit emarginate or sub-cordate at the base, concolorous. Plant glabrous, with the petioles pilose at the apex.

In marshes, bogs, and by the sides of ditches. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Stem whitish, creeping, often wholly or partially buried in the earth; sometimes floating in water, when it grows to a great length, with distant nodes, from which are produced tufts of root-fibres and 1 or 2 leaves. Leaves on stalks 1 to 10 inches long; lamina $\frac{1}{2}$ to 2 or more inches in diameter, with the stalk coming from nearly the centre, and with 7 to 9 radiating straight veins, each vein the centre of a large blunt crenature, which is sometimes again more faintly crenated. Peduncles shorter than the leaves. Flowers nearly sessile, about $\frac{1}{12}$ inch across, greenish-white tinged

* Dr. Berthold Seemann places Hydrocotyle among the Hederaceæ, on account of the petals being valvate; and had this been the only transposition of the genera of Umbelliferæ under Aralliaceæ, it might readily have been accepted.

with red. Involucre of small triangular hooded leaves. Petals entire, boat-shaped. Cremocarp much broader than long, $\frac{1}{12}$ inch broad, much compressed, constricted at the line of the commissure, with the lateral pair of ridges of each mericarp prominent; dorsal ridge generally prominent, so that the back of each mericarp is keeled; the intermediate ridges are frequently obliterated, but sometimes are almost as conspicuous as the others. Plant glabrous, except the top of the leaf-stalks, and occasionally the veins of the leaves on the under side, which have white spreading hairs. Leaves shining, bearing much resemblance to those of Cotyledon Umbilicus, except that they are not fleshy, and have no central depression.

Marsh Pennywort.

French, *Hydrocotyle Vulgaire.* German, *Gemenier Wassernabel.*

There is a notion among farmers and others that this plant is injurious to sheep or cattle that may feed upon it, and it has accordingly been called white rot and flukewort. Gerarde tells us that there "is a kind of navel wort that groweth in watery places which is called of the husbandman sheep's bane, because it killeth sheep that do eat thereof." The error in this notion is in ascribing the mischief to any particular plant rather than to the situation which favours the growth of the plant, and engenders disease in the animals. Were the ground drained, the marsh-loving plants would disappear, but so also would the illness in the sheep which fed in the pasture. Many calamities among cattle are by ignorant farmers attributed to their feeding on these marsh plants, which in reality result from the boggy damp grounds on which they live, and on which alone such plants will grow. Were the plants gathered and given to the animals on dry ground, we feel sure no harm would come to them. Gerarde tells us that "the Water Pennywort is of an hot and ulcerating quality, like to the Crowfoot, whereof it is a kinde. The ignorant apothecaries doe use the Water Pennywort instead of this of the wall, which they cannot doe without great error, and much danger to the patient; for husbandmen know well that it is noisome unto sheepe and other cattele that feed thereon, and for the most part bringeth death unto them, much more to men by a stronger reason." The same old author tells us that the Marsh Pennywort is to be found "upon the bogges on Hampstead heath, and many such rotten grounds in other places." It was gathered in the same place by the writer not long since.

Tribe II.—SANICULEÆ.

Cremocarp neither laterally nor dorsally compressed, often crowned by the calyx-teeth; columella adnate to the mericarps; mericarps with 5 primary ridges, the lateral or all the ridges sometimes obsolete, generally clothed with scales, tubercles, or hooked prickles. Flowers in simple or irregularly-compound umbels or heads.

GENUS II.—ASTRANTIA. *Linn.*

Calyx-limb of 5 large lanceolate teeth. Petals erect, oblong-ovate, with an inflexed lobe. Cremocarp oblong-ovoid, clothed with imbricated scale-like plaits on the ridges, crowned by the lanceolate calyx-teeth; columella adnate; mericarps scarcely separable, with enlarged prominent ridges; vittæ none.

Herbs with simple roundish palmately-lobed or -partite leaves. Umbels simple, many-flowered, compact, sometimes combined into a very irregular compound umbel. Flowers white or pale pink, the central ones perfect, the exterior ones male with the ovary abortive.

The name of this genus of plants comes from the Greek word αστρον (*astron*), a star, in reference to the appearance of its umbels of flowers.

SPECIES I.—ASTRANTIA MAJOR. *Linn.*

PLATE DLXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1843.
Billot, Fl. Gall. et Germ. Exsicc. No. 367.

Radical leaves circular, palmately partite; lobes 5, rarely 3 or 7, ovate-lanceolate, acute, often trifid, doubly dentate-serrate, with the serratures produced into cartilaginous bristles; cauline leaves few and much smaller. Calyx-teeth lanceolate, acuminate-aristate, longer than the petals. Involucre of numerous oblanceolate acuminate leaves, equalling or exceeding the flowers. Cremocarp oblong-prismatic, slightly attenuated towards the base.

In woods. Rare, possibly planted. Discovered by Mr. Daniel Sharp by a path along the upper edge of the wood above Stokesay Castle, near Ludlow, Shropshire, and between Whitbourne and Malvern, Herefordshire.

England. Perennial. Summer and Autumn.

Rootstock shortly creeping, clothed at the summit with a few of the fibres of the decayed leaf-stalks. Stem 1 to 2 feet high, simple or slightly branched. Radical leaves several, on petioles 3 to 9 inches long; lamina 2 to 4 inches across, sub-cordate at the base. Stem-leaves shortly stalked, with the petiole enlarged like a sheath. General umbel so irregular that the inflorescence might be said either to be in simple umbels, or in an irregular compound umbel with the rays of unequal length, and some of them with smaller opposite umbellules below the terminal one; at the base of this pseudo-general umbel there is an involucre of large leaf-like bracts,

slightly tinged with white, and reticulated with dark green, the edges towards the apex serrate, with the serratures ciliate, as in the leaves; involucel or involucre of the simple umbels or umbellules petaloid, white or tinged with dull pink, $\frac{3}{4}$ to $1\frac{1}{4}$ inch across, with very numerous strap-shaped-oblanceolate, acuminate and aristate leaves, with prominent reticulated veins, which are green towards the apex, where there are often a few bristle-tipped teeth. Flowers $\frac{1}{8}$ inch across, white or pale pink, very numerous, on long stalks. Calyx-segments $\frac{1}{12}$ inch long, abruptly acuminated into an awn-like point; petals with a shallow notch and a long inflexed lobe from the notch. Stamens much longer than the petals and sepals, incurved. Styles elongate, recurved. Cremocarp $\frac{1}{8}$ inch long, slightly clavate, with the ridges entirely covered with white semi-transparent crimped scales. Plant glabrous, dark green.

Greater Astrantia.

French, *Astrance à Grandes Feuilles.* German, *Grosse Strenze* or *Astränze.*

GENUS III.—SANICULA. *Linn.*

Calyx-limb of 5 lanceolate teeth. Petals connivent, oblong-obovate, notched, with a long inflexed lobe. Cremocarp roundish-ovoid, covered with bristles which are hooked at the apex, crowned by the lanceolate calyx-teeth; mericarps without ridges; vittæ numerous.

Herbs with simple palmately- or pinnately-lobed or cut leaves. Umbels simple, compact, almost reduced to heads, arranged in a very irregular compound umbel. Flowers pinkish-white, perfect ones few, the exterior male without the abortive ovary.

The origin of the name of this genus is the Latin word *sano*, I heal or cure, in reference to the supposed virtues of one of the species.

SPECIES I.—SANICULA EUROPÆA.

PLATE DLXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1847.
Billot, Fl. Gall. et Germ. Exsicc. No. 25.

Radical leaves pentagonal, palmately partite; lobes 3 to 5, rhomboidal, often 3-cleft, serrate with the serratures mucronate. Stem-leaves few or none. General umbel very irregular, the rays often bi- or tri-furcate; the umbellules forming hemispherical heads. Perfect flowers few, sessile; male flowers exterior, shortly pedicellate. Calyx-teeth lanceolate, aristate. Cremocarp closely covered with ascending bristly spines, hooked inwards at the apex.

In woods and thickets. Common, and generally distributed, but not reaching to Orkney.

England, Scotland, Ireland. Perennial. Summer.

Rootstock shortly creeping, with a few thick brownish scales at the top, the remains of decayed leaf-stalks. Stem erect, 8 inches to 2 feet high, simple, often leafless or with a single leaf. Radical leaves on stalks 2 to 8 inches long, lamina $1\frac{1}{2}$ to 3 inches across, cordate at the base. General involucre of several pinnatifid or simple mucronate serrate leaf-like segments; rays of the umbel 2 to 8, at first short, afterwards elongate and very unequal; umbellules $\frac{1}{4}$ inch across. Involucel of numerous linear aristate leaves. Flowers $\frac{1}{16}$ inch across, white tinged with pink, the male flowers in 2 or 3 rows on the outside, with the calyx-segments and petals larger than in the female ones. Ovary covered with hooked bristly prickles in the female flowers. Petals about as long as the calyx-teeth, notched, erect, with an inflexed point. Stamens incurved, much longer than the petals. Cremocarp $\frac{1}{6}$ inch long, ovate-ovoid, thickly covered with hooked spines. Plant glabrous, bright-green, the leaves paler beneath; stems often reddish.

Wood Sanicle.

French, *Sanicle d'Europe.* German, *Europäischer Sanikel.*

The name of this genus is usually stated to have reference to its reputed healing powers; but we learn from Dr. Prior, the most recent writer on the origin and meaning of the names of British plants, that it is not so. He says: "On the principles of etymology it is impossible, indeed, as Adelung remarks, an even question, whether its origin be Latin or German." The great abundance of the plant in the middle and the North of Europe would incline us rather to the latter as the likeliest, and it may be a corruption of Saint Nicolas, called in German Nickel. Whatever its origin, the name was understood in the Middle Ages as meaning "curative," and suggested many proverbial axioms; such as—

"Celuy qui sanicle a,
De mire affaire il n'a."

"He who keeps sanicle has no business with a doctor."

Sanicula does not occur in classical Latin writers, and there is no such word as *sanis* or *sanicus*, from which it could have been formed. But in favour of the derivation from St. Nickel is the wonderful tale of his having interceded with God in favour of the two children whom an innkeeper had murdered and pickled in a pork-tub, and obtained their restoration to life and health. A plant named after this saint, and dedicated to him, might very reasonably be expected to "make whole and sound all wounds and hurts both inward and outward," as Leyte and other herbalists tell us of the Sanicle. It was as a vulnerary that this plant gained its medical reputation. To the taste it is very bitter and rough, and Sir James Smith entertained the idea that it partook of the poisonous acridity which is so frequent in the Umbelliferæ.

GENUS IV.—ERYNGIUM. *Linn.*

Calyx-limb of 5 lanceolate teeth. Petals connivent, oblong-obovate, notched, with an inflexed point as long as the petals. Cremocarp cylindric-ovoid or sub-globular, clothed with scales and crowned by the calyx-teeth; mericarps without ridges or vittæ.

Herbs, often spinescent, with the leaves simple, frequently palmately or pinnately cut or divided. Umbels simple, reduced to many-flowered heads, with spinous involucres and also with spinous bracts beneath each flower.

The name of this genus of plants has reference to its supposed efficacy in flatulent disorders, and comes from the Greek words ερυγγυον (*eruggyon*), and ερυγειν (*eruxein*).

SPECIES I.—ERYNGIUM MARITIMUM. *Linn.*

PLATE DLXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1849.
Billot, Fl. Gall. et Germ. Exsicc. No. 2855.

Radical leaves stalked, roundish, sub-cordate, not decurrent, cut into 3 lobes at the apex, coarsely spinous-serrate, undulated; upper stem-leaves sessile, sub-amplexicaul, palmately lobed. Involucre of 5 to 7 ovate-rhomboidal spinous-serrate spinous-pointed leaves, longer than the flowers; bract of each separate flower tricuspid with the lateral spines divaricate, as long as the calyx.

On sandy sea-shores. Rather scarce; rare in Scotland, and not extending North of Forfarshire and Argyelshire, except in the outlying locality of Shetland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock creeping, emitting subterranean stolons. Stem 6 to 18 inches high, thick, solid, trichotomously branched at the summit, and often with solitary alternate branches lower down. Radical leaves on stalks 2 to 7 inches long; lamina 2 to 5 inches across, usually 3-lobed, with the central lobe much narrower than the lateral lobes, which overlap it; the margin of the leaf thickened, cartilaginous; lower stem-leaves shortly stalked, resembling the radical ones; the others sessile and half embracing the stem, which terminates in a shortly-stalked head, below which it gives off 2 or 3 spreading branches, all from one point, which is surrounded by a whorl of 3 leaves,—these branches and the central head represent the primary umbel; heads of flowers at first globose, afterwards ovoid,

$\frac{3}{4}$ to 1 inch across. Flowers sessile, whitish, $\frac{1}{8}$ inch across. Calyx-tube thickly clothed with soft cartilaginous bristles; calyx-teeth lanceolate acuminate, with a strong central nerve excurrent in a spine. Petals erect, shorter than the calyx-teeth, slightly notched, with a long inflexed lobe. Stamens incurved. Styles elongated, slightly curved outwards. Cremocarp $\frac{1}{3}$ inch long, without ribs, sparingly clothed with paleaceous bristles, crowned by the calyx-teeth, which are nearly as long as the cremocarp; mericarps with a corky expansion on each side, which makes them wider from side to side than from back to front, separating readily from each other when ripe, showing no indications of a columella. Plant intensely glaucous, tinged with blue towards the top, especially on the involucres and flower-heads; leaves cartilaginous.

Sea-Holly.

French, *Panicaut Maritime.* German, *Meerstrands Männertreu.*

This plant is sometimes called Sea-Hulver and Sea-Holme. It abounds on most sandy sea-shores, and is very plentiful on the Eastern coast. According to Linnæus, the young flowering-shoots, when boiled and eaten like asparagus, are very palatable and nourishing. The leaves are sweetish, with a slight aromatic warm pungency. The roots are said to have the same virtues as those of the Orchis tribe. They are sold in some places in a candied form, and are regarded by the Arabs as an excellent restorative. They are said to have been prepared in this manner by one Robert Burton, an apothecary of Colchester, in the seventeenth century; but the roots were in use long before, and we are told that the "kissing-comfits" alluded to by Falstaff were made of them. Dioscorides recommends them as a remedy in flatulence.

SPECIES II.—ERYNGIUM CAMPESTRE. *Linn.*

PLATE DLXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1852.
Billot, Fl. Gall. et Germ. Exsicc. No. 2474.

Radical leaves stalked, deltoid or rhomboidal, not decurrent or decurrent, very deeply pinnatifid (almost pinnate), undulated; lower segments pinnatifid and coarsely spinous-serrate, the uppermost ones only coarsely spinous-serrate; upper stem-leaves sessile, amplexicaul, deeply pinnatifid. Involucre of 5 to 7 strapshaped acuminate entire or spinous-pinnatifid spinous-pointed leaves, much longer than the flowers. Bract of each separate flower spinous, entire, or tricuspid with the lateral spines erect-ascending, much longer than the calyx.

In dry waste places. Rare, and possibly not native. Near Plymouth, Devon; Weston-super-Mare, Somerset; Tyne ballast-hills, Durham; and banks of the Taff, near Cardiff, Glamorgan-

shire; formerly also by Watling Street, near Brook Hall, where it is now extinct.

England. Perennial. Summer and Autumn.

Rootstock elongate thickened. Stem erect or ascending, much branched, 1 to 2 feet high. Radical leaves on stalks 2 to 8 inches long, the lamina 3 to 8 inches across, deltoid and not decurrent in the specimens I have from Plymouth, but rhomboidal and decurrent, sometimes nearly to the base of the petiole, in those from Weston-super-Mare, pinnatifid with 4 to 6 pair of segments, each pair with the decurrent portion narrowing downwards until it disappears where the next pair of pinnæ are situated; lowest segments much the largest and most deeply divided; stem-leaves smaller than the radical ones, sessile, with large auricles embracing the stem, which terminates in a single stalked flower-head, beneath which it is trichotomously branched as in E. maritimum, but the branches are more repeatedly dichotomous than in that plant, and the stem itself is much more branched. Flower-heads $\frac{1}{2}$ to $\frac{5}{8}$ inch across, at first globular, afterwards shortly-ovoid. Bracts of the separate flowers usually entire. Calyx-segments lanceolate, abruptly acuminate, with a long excurrent spinous midrib. Cremocarp $\frac{1}{4}$ inch long, roughened, thickly clothed with white scarious lanceolate scales. Plant pale glaucous-green, glabrous.

Field Eryngo.

French, *Panicaut des Champs.* German, *Feld Männertreu.*

Tribe III.—AMMINEÆ.

Cremocarp laterally compressed, often sub-didymous; columella distinct, generally free; mericarps with 5 primary ridges, ridges equal, filiform, rarely winged, the lateral ones usually marginal, all equal. Seed flat on the inner face, or nearly so. Flowers in regular compound umbels.

GENUS V.—CICUTA. *Linn.*

Calyx-limb of 5 deltoid-ovate teeth. Petals obovate, obcordate, with a short inflexed point coming from the notch. Cremocarp smooth, sub-globular, laterally compressed, constricted at the line of junction of the mericarps, so as to be didymous; columella free, bipartite; mericarps with the ridges broad and flat, nearly equal, the lateral ones remote from the margin; interstices each with a single vitta. Involucre none or few-leaved; involucels many-leaved.

Glabrous perennial aquatic herbs, with fistulose stems and

tripinnate or triternate leaves. Involucre none; involucels of many bracts. Flowers white, in large regular umbels.

The derivation of the name of this genus of plants seems somewhat doubtful. We find it given by some writers as coming from the Latin words *cieo* or *quatio*, I cause to shake; by others, from *cæcus*, hidden or blind. Cicuta was a plant with a hollow stem, used by the Italian shepherds to make pipes or whistles.

SPECIES I.—CICUTA VIROSA. *Linn.*

PLATE DLXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1853.
Billot, Fl. Gall. et Germ. Exsicc. No. 2681.

Root-fibres slender. Rootstock short, præmorse, hollow, with transverse partitions. Radical leaves bipinnate; ultimate leaflets or segments strapshaped-elliptical, entire or cleft, coarsely and unequally serrate.

In ditches and the margins of lakes. Local, though widely distributed, occurring from Somerset to Forfarshire and Dumbartonshire; most frequent about the Norfolk broads.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem erect, branched, hollow, 1 to 4 feet high. Lower leaves very large, triangular or lanceolate in outline, on thick hollow petioles, with the pinnæ again pinnate; the secondary pinnæ undivided or 2- or 3-cleft or partite or pinnatifid, 1 to 3 inches long, varying in breadth from $\frac{1}{8}$ to $\frac{5}{8}$ inch; stem-leaves much smaller and less compound. Umbels flat-topped, lax, stalked, terminal or (from the growth of an axillary branch) opposite the leaves; rays of the umbels* 1 to 2 inches long; pedicels $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Involucre none; involucel of numerous linear tapering leaves, shorter than the flowers. Flowers $\frac{1}{8}$ inch across, white. Calyx-teeth ovate, much shorter than the petals, persistent. Petals roundish-obovate, spreading, slightly notched, with a small inflexed lobe. Cremocarp with the breadth greater than the length, which is $\frac{1}{10}$ inch, reddish-brown, with the vittæ apparent when dry; ridges broad, little elevated; styles long, reflexed.

Water Hemlock.

French, *Cicutaire vénéneuse.* German, *Giftiger Wütherig.*

This plant is also known by the name of Cowbane, and is one of the most virulent of our vegetable poisons. It was formerly used for medicinal purposes, but has been

* Throughout the whole of the order Umbelliferæ, the measurements given of the rays is that of the exterior or longest rays when in fruit.

superseded by other remedies. Cattle are not unfrequently destroyed by eating it, and occasionally—possibly through carelessness—accidents have happened to children and others partaking of it ignorantly. Haller supposed it to be the *κωνειον* of the Greeks, though the action of the Greek poison-cup did not agree with the known properties of Cicuta. It is sometimes applied externally as a poultice for rheumatism.

GENUS VI.—APIUM. *Linn.*

Calyx-limb obsolete. Petals suborbicular, entire, with an inflexed point. Cremocarp nearly globular, laterally compressed, subdidymous; columella free, entire; mericarps with 5 equal filiform ridges, the lateral ones marginal; interstices each with a single vitta. Involucre and involucel none.

Herbs with pinnate leaves and shortly-stalked terminal or lateral umbels. Flowers greenish-white.

The origin of the name of this genus is *apex*, the summit or crown, in allusion to its use for crowning in the ancient triumphs.

SPECIES I.—APIUM GRAVEOLENS. *Linn.*

PLATE DLXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1854.
Billot, Fl. Gall. et Germ. No. 1887.

Radical leaves pinnate, with 2 or 3 pairs of angular deltoid or rhomboidal cut or lobed and crenate-serrate or serrate pinnæ, the lower pair stalked and frequently ternate. Umbels shortly stalked, opposite the leaves and terminal. Cremocarp broader than long, with the ridges very prominent.

In damp places impregnated with salt, especially along the side of ditches by the sea and tidal rivers. Frequent in England, rare in Scotland, though found in a few places on the West coast, as far North as Cantire, in Argyleshire: also reported from the East Lowland coast, where, however, I have never seen it, though I have a specimen from Musselburgh Links collected by Dr. J. R. Scott; but I have no doubt it had been introduced in that locality, and it probably does not grow there now.

England, Scotland, Ireland. Biennial. Summer and Autumn.

Root fusiform, producing the first year a tuft of radical leaves on petioles 3 inches to 1 foot long; lamina with 2 or 3 pairs of leaflets 1 to 3 inches across, or more; the lower pair with a stalk $\frac{1}{2}$ to 2 inches long, the second pair with the stalk about half the length of the first, the upper pair sessile and often more or less

united with the terminal one; leaflets often 3-cleft, sometimse almost ternate, the segments cut, and rather bluntly serrate—the second year, when the plant sends up its flowering-stem, the radical leaves are smaller and soon decay. Stem 1 to 2 feet high, very much branched, with ascending branches. Lower stem-leaves stalked, pinnate, with about 2 pairs of pinnæ like those of the radical leaves; the upper stem-leaves shortly stalked, ternate, with slightly dilated sheathing bases to the petioles; leaflets wedge-shaped, cut at the apex. Umbels shortly stalked or subsessile, terminal and opposite the leaves, rather irregular, the outer rays $\frac{1}{2}$ to $1\frac{1}{4}$ inch long; pedicels $\frac{1}{8}$ inch long, or a little more. Involucre and involucel none. Flowers $\frac{1}{12}$ inch across, white tinged with green. Petals roundish, subcordate and with a very short claw at the base, entire and incurved at the apex. Stamens scarcely longer than the petals. Cremocarp $\frac{1}{16}$ inch long and a little broader, dark-brown when ripe, with the ribs paler, slender, and very prominent; styles rather short, recurved; columella entire. Plant glabrous, slightly shining, not glaucous.

Wild Celery.

French, *Ache odorante.* German, *Gemeine Sellerie.*

In its wild state Celery is known in Britain by the name of Smallage. In its native ditches it is rank and coarse, and is certainly unwholesome, although used by some for flavouring broths and soups. When subjected to the cultivation of the gardener, it loses all its deleterious qualities, and becomes a palatable and wholesome vegetable. For this transformation and for its name we are indebted to the Italians, who introduced it first in its improved form in the seventeenth century, under the name of *sellari*, the plural of *sellaro*, and corrupted from the Latin *selinum*, Greek σελινον. The great art of the gardener in the cultivation of Celery appears to be in so excluding light from the stalks as to blanch them: this is done by earthing them up as they grow with rich mould and manure, a process which probably accounts for the absence of injurious properties in the cultivated Celery, as the active principles of the leaves of plants are rarely developed when deprived of light. A variety of the Celery with a large tuberous root, known by the name of Celeriac, is more grown in Continental Europe than in Britain. It is largely used in soups, in which slices of the root are boiled, and give a pleasant flavour. With the Germans it is a common salad, for which the roots are prepared by boiling until a fork will easily pass through them: after they are boiled and become cold, they are eaten with oil and vinegar: they are also served up at table with rich sauces. In all cases, before they are boiled, the coat and fibres of the roots, which are very strong, are cut away, and the root is put in cold water on the fire, not in water previously boiling. Celery as it is used in England, with large blanched leaf-stalks, sometimes attains a very large size in richly-manured ground, especially in the North of England. A head grown near Manchester in 1815 weighed upwards of nine pounds. Celery is stimulating and diuretic, and probably not very wholesome when taken in large quantities. We read of it in the old herbals under the name of Smallage, and Gerarde tells us that it "hath a peculiar vertue against the biting of venomous spiders."

GENUS VII.—HELOSCIADIUM. *Koch.*

Calyx-limb obsolete, or of 5 small teeth. Petals oval or ovate, not notched, with the point erect or slightly incurved. Cremocarp oval-ovoid or oblong-ovoid, laterally compressed; columella entire, free; mericarps with 5 filiform prominent equal ridges; interstices each with a single vitta. Involucre none, or of few leaves; involucel of numerous leaves, or of few leaves all on one side.

Herbs with pinnate leaves and white flowers in few-flowered irregular umbels.

This genus of plants is named from two Greek words ἵλος (*helos*), a marsh, and σκιάδιον (*skiadion*), an umbel, meaning an umbelliferous plant inhabiting marshes.

SPECIES I.—HELOSCIADIUM NODIFLORUM. *Koch.*

PLATES DLXXIII. DLXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 66.
Billot, Fl. Gall. et Germ. Exsicc. No. 2849.
Apium nodiflorum, *Reich. fil*, Ic. Fl. Germ. et Helv. Vol. XXI. p. 10.

Stem decumbent or prostrate, rooting at the lower or at all the nodes. Leaves pinnate (rarely ternate), with 2 to 6 pair of pinnæ; leaflets sessile, elliptical-lanceolate, oval or ovate, rounded at the base, undivided or slightly lobed, serrate. Umbels opposite the leaves, subsessile or shortly stalked; rays 4 to 10, unequal. Involucre usually of few leaves; involucel of numerous leaves, scarious at the margins. Cremocarp longer than broad.

Var. *α*, *vulgare*. Schultz.

PLATE DLXXIII.

Sium nodiflorum, *Linn.* *Sm.* Eng. Bot. No. 639.

Stems decumbent, the flowering portion rooting only at the base. Leaflets elliptical-lanceolate or ovate-lanceolate. Umbels very shortly stalked, without an involucre, or one of 1 or 2 leaves.

Var. *β*, *repens*.

PLATE DLXXIV.

H. repens, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 312. *Gr.* & *Godr.* Fl. de Fr. Vol. i. p. 756.
H. nodiflorum, var. *γ*, longepedunculatum, and H. repens, *F. Schultz*, Arch. de Fl. p. 137.
Apium repens, *Reich. fil.* Ic. Fl. Germ. et Helv. Vol. XXI. p. 10.
Sium repens, *Sm.* Eng. Bot. No. 1431.

Stems prostrate, the flowering as well as the barren branches creeping. Leaflets ovate or ovate-lanceolate. Umbels on stalks

longer than their own rays, with an involucre of 2 or 3 unequal leaves on the side opposite the stem.

In wet places, and at the sides of watercourses and lakes. Common, and pretty generally distributed, but not reaching North of Edinburgh and Argyleshire. Var. β rather rare. I have only collected it in Guillon Ponds, Haddingtonshire, and Duddingston Loch, Edinburgh. Mr. Watson mentions that he has also received it from Suffolk.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Var. α has the stem much branched, 6 inches to 3 feet long, decumbent, rooting at the joints, the lower branches barren and generally rooting throughout. Leaves stalked, with the petiole half sheathing at the base, the pinnæ ½ to 2 inches long, varying in breadth and in the degree of approximation to each other, but generally with the width apart equal to their own length, the uppermost pair frequently confluent with the terminal one. Umbels with stalks shorter than their own rays, sometimes almost sessile; rays divaricate, unequal, the longest ½ to 1 inch long; rays of the umbellules ⅛ to ⅙ inch long. Involucre usually absent, involucel of numerous subscarious leaves as long as the rays of the umbellule. Flowers $\frac{1}{16}$ inch across, greenish-white. Petals lanceolate, entire, incurved at the tip. Cremocarp about $\frac{1}{16}$ inch long, dark-brown, with the ribs rather prominent and paler. Styles short, slightly recurved. Plant pale-green, glabrous.

Var. β is distinguished by its creeping stems with leaves at right angles to it, and umbels with stalks usually longer than the rays; and, besides this, the involucre is commonly present, though on the same plant we may find umbels with or without involucres; the leaves also are generally broader, more deeply serrate, or even with a tendency to become slightly lobed.

Dr. F. Schultz, in the Archives de Flora, *l. c.*, distinguishes H. repens of Koch from the procumbent varieties of H. nodiflorum by having the involucre of the same number of leaves (4 to 6) as there are rays of the umbel, and disposed all round the circle instead of being dimidiate. I have seen no British plant which answers this description; but as the involucre varies on the same plant in the number of its leaves, I doubt if Dr. Schultz's H. repens can be considered specifically distinct from H. nodiflorum. My specimens from Duddingston Loch and Haddingtonshire approach very closely in habit to the Continental H. repens. On the other hand, the plant figured in "English Botany" comes much nearer the small state of H. nodiflorum, var. α.

Procumbent Water-Parsnip.

French, *Hélosciadie nodiflore.* German, *Knotenblüthiger Scheiberich.*

This plant is very common in our streams and ditches, and is the one against which so much caution is given lest it should be mistaken for watercress. It is usually known by the name of *Sium nodiflorum*, and was at one time admitted into the London Pharmacopœia as an antiscorbutic. Dr. Withering speaks of it as a valuable remedy, and mentions the case of a young lady whom he cured of a cutaneous eruption, by giving her three large spoonfuls of the juice twice a day mixed in milk. He affirms that in this way it produces no unpleasant results. It would appear, therefore, that if at any time eaten by mistake for watercresses, it need cause no alarm as to any serious consequences ensuing. A little knowledge and care will, however, prevent any such mistake being made, if it be remembered that the leaves of the Umbelliferæ, to which the objectionable plant belongs, always sheath at their base. It is often called *Fool's Watercress*.

SPECIES II.—HELOSCIADUM INUNDATUM. *Koch.*

PLATE DLXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1855.
Billot, Fl. Gall. et Germ. Exsicc. No. 2679.
Apium nodiflorum, *Reich. fil*, Ic. Fl. Germ. et Helv. p. 10.
Sison inundatum, *Linn.* *Sm.* Eng. Bot. No. 227.

Stem floating or decumbent, rooting at the lower nodes. Lower leaves bi- or tri-pinnate, with the ultimate segments setaceous, rarely linear; upper leaves pinnate, with 2 to 6 pair of pinnæ; leaflets wedgeshaped or rhomboidal, attenuated towards the base, pinnatifid or deeply cut. Umbels opposite the leaves, shortly stalked; rays generally 2, but from 2 to 4, unequal. Involucre none; involucel of 3 or 4, rarely 5 or 6, lanceolate 3-nerved herbaceous leaves. Cremocarp longer than broad.

In ponds and wet places, by the sides of lakes. Rather rare, but generally distributed.

England, Scotland, Ireland. Perennial. Summer.

A small inconspicuous plant, with stems 3 inches to 1 foot long. Submerged leaves divided into capillary segments somewhat resembling those of the Batrachian Ranunculi, the upper leaves and flowers rising out of the water: these leaves have broad sheathing petioles and rather distant leaflets, the lowest pair, especially, remote from the others, $\frac{1}{8}$ to $\frac{3}{4}$ inch long, more deeply incised or divided than in H. nodiflorum. Umbels on stalks $\frac{1}{2}$ to 1 inch long, usually of 2 divaricate rays, the longest $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Flowers very minute, with the petals oval, flaccid, entire, and slightly incurved at the point. Cremocarp $\frac{1}{8}$ inch long, brown, with the ribs paler, broad and very prominent. Styles very short, recurved. Plant green, glabrous.

Dr. D. Moore finds in the river Boyne, co. Cavan, a very luxuriant form, which is nearly as large as H. nodiflorum, and has the

lower leaves with the segments of the leaflets mostly linear or strapshaped, not setaceous; the involucel of 5 or 6 leaves.

Least Water-Parsnip.

GENUS VIII.—PETROSELINUM. *Hoffm.*

Calyx-teeth obsolete. Petals sub-orbicular, nearly entire, slightly notched, with a small inflexed point. Cremocarp oval-ovoid or sub-globular, laterally compressed, subdidymous; columella free, bipartite, or cleft at the top; mericarps with 5 filiform ridges; interstices each with a single vitta attenuated at each end.

Herbs differing much in aspect, with yellowish or greenish-white flowers.

The name of this genus is derived from the Greek words πετρος (*petros*), a rock, and σελινον (*selinon*), parsley, in reference to the habitat of the species.

SPECIES I.—PETROSELINUM SATIVUM. *Hoffm.*

PLATE DLXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1856.
Billot, Fl. Gall. et Germ. No. 2793.
P. hortense, *Hoffm. Reich.* Ic. Fl. Germ. et Helv. Vol. XXI. p. 10.
Apium Petroselinum, *Linn.* Sp. Plant. p. 379.

Stem erect, stout, furrowed, slightly flexuous. Lower leaves triangular in outline, ternately bipinnate; leaflets broad, 3-cleft or 3-partite, cut, and serrated; lower stem-leaves shortly stalked, similar to the radical ones, but smaller; upper ones pinnate, with wedgeshaped or elliptical-strapshaped segments. Involucre dimidiate, of 2 or 3 leaves, one of them often pinnatifid; involucel of numerous lanceolate leaves. Umbels flat-topped, with the outer rays all equal, spreading-ascending. Columella split to the base. Styles reflexed, longer than the stylopod.

On rocks, old buildings, and waste places. Not unfrequent, but no doubt escaped from cultivation.

England, Scotland, Ireland. Biennial. Summer.

Root fusiform, producing the first year a number of ascending leaves on stalks 2 to 9 inches long; lamina 3 to 6 inches, or more, with the lower pair of pinnæ on long stalks, and more remote from the succeeding pair than that from the next; leaflets $\frac{3}{4}$ to 1 inch long, rhomboidal-ovate, cleft, with the segments wedgeshaped and cut into lobes or teeth with rounded edges. Flowering-stem produced the second year, 1 to 2 feet high, solid, angular, much branched,

the branches somewhat corymbose. Outer rays of the umbel $\frac{1}{2}$ to $1\frac{1}{2}$ inch long; pedicels $\frac{1}{8}$ to $\frac{1}{4}$ inch. Leaves of the involucel shorter than the rays, and applied to them. Flowers $\frac{1}{10}$ inch across, very pale greenish-yellow. Petals roundish, sub-cordate at the base, and with a very short claw, notched at the apex, and with a very small inflexed point. Cremocarp oval-ovoid, slightly tapering towards the apex, a little longer than broad, dark-brown, with the ridges slender, prominent, pale. Plant bright-green, glabrous.

Common Parsley.

French, *Persil cultivé.* German, *Gemeine Petersilie.*

The Parsley so well known in our gardens and on our tables was used by the Romans, and seems even to have been mentioned by Dioscorides. The name is somewhat the same in all languages, the English name Parsley greatly resembling the French *Persil*. It was first cultivated here in 1548. Gerarde calls it *Parsele*, and says, "it is delightful to the taste, and agreeable to the stomach," and that the "roots or seeds boiled in ale and drunken cast forth strong venom or poison, but the seed is the strongest part of the herbe."

The uses of Parsley as a culinary agent are well known. It is a diuretic, and the decoction acts as a sudorific. The flavour of this herb, as well as of others used in cookery, can be artificially preserved, and rendered available when the fresh plants cannot be obtained. Lately the French chemists have prepared a very pleasant mixture of salt with the flavours of different herbs, which can be added to soups, gravies, and other dishes with very good effect. We imagine that these preparations are made chiefly from the fruits of these herbs, as they retain the largest portion of the peculiar flavour of each herb. In writing of Parsley and its culture, Dr. Neill says: "It may be right to notice that the poisonous plant called Fool's Parsley (*Æthusa Cynapium*), a common weed in rich garden soils, has sometimes been mistaken for common Parsley. They are very easily distinguished: the leaves of Fool's Parsley are of a darker green, of a different shape, and instead of the peculiar parsley smell, when bruised, have a disagreeable odour. When the flower-stem of the Fool's Parsley appears, the plant is at once distinguished by what is vulgarly called its beard,—the three long pendent leaves of the involucrum." The timid may avoid all risk of mistake by cultivating only the curled variety: this last, it may be remarked, makes the prettiest garnish. Parsley is considered to be a preventive of the rot in sheep, with which view it has sometimes been sown in pastures. Sheep are certainly very fond of it, appearing to prefer it to any other food; but its beneficial action on disease is doubtful. Rabbits and hares are extremely partial to it, so much so that it is difficult to keep them out of a garden where it is grown. The seed of Parsley is a long time vegetating after being sown, the plant remaining under ground for nearly forty days. One sowing in spring will mostly furnish young leaves all the year, though, to meet a constant demand, some persons make successive sowings from February to May. In former times Parsley was esteemed a remedy for many disorders, as we find from Gerarde's opinion already quoted. Its imagined quality of overcoming poison was probably owing to its power of overcoming strong scents, even the odour of garlic being imperceptible when mingled with Parsley.

SPECIES II.—PETROSELINUM SEGETUM. *Koch.*

PLATE DLXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1856.
Billot, Fl. Gall. et Germ. Exsicc. No. 770.
Sison segetum, *Linn. Sm.* Eng. Bot. No. 228.

Stems ascending, straight between each node, slender, finely striated. Leaves all strapshaped or lanceolate in outline, pinnate; leaflets sessile, ovate, cut or serrate, with the lobes or serratures mucronate; uppermost leaves with a few pairs of linear pinnæ. Involucre of 2 or 3 linear subacute leaves; involucel of 3 or 4 short subacute leaves. Umbels very irregular, with the rays all unequal, erect-ascending. Columella split about halfway down. Styles erect, shorter than the stylopod.

On hedge-banks and by road-sides and waste places. Local; abundant in Kent and Essex, and other places in the South of England, extending as far North as the neighbourhood of Hull.

England. Biennial or Annual. Late Summer and Autumn.

Root slender, fusiform, producing at first a rosette of shortly-stalked leaves, spreading in a circle, with leaflets $\frac{1}{4}$ to 1 inch long. Primary stem erect, with long straight internodes, afterwards much branched, and the branches ascending or procumbent, forming acute angles with each other, 6 inches to 3 feet long, bright-green, polished, resembling the stems of a rush. Stem-leaves similar to the root-leaves, but smaller, most of them usually decayed by the time of flowering. Umbels with the longest rays 1 to 2 inches long; umbellules with very unequal pedicels, the longest about $\frac{1}{4}$ inch the innermost flowers subsessile. Involucre of unequal leaves, the longest about half the length of the longest umbel rays; involucel about one-third of the length of the longest umbellule ray. Flowers $\frac{1}{20}$ inch across, white; petals sub-orbicular, nearly entire, with an inflexed lobe. Cremocarp ovate-ovoid, $\frac{1}{8}$ inch long, olive, with the ridges rather thick, elevated, green. Styles very inconspicuous. Plant dark-green, glabrous.

Corn Parsley.

GENUS IX.—SISON. *Linn.*

Calyx-limb obsolete. Petals roundish-obovate, deeply notched, with a small broad inflexed point in the notch. Cremocarp subglobular, laterally compressed; columella free, bipartite; mericarps with 5 equal filiform ridges, the lateral ones marginal; interstices

each with a clubshaped vitta, attenuated towards the top, and not reaching the base. Involucre and involucels few-leaved.

A biennial herb, with pinnate leaves and paniculately branched stems, with irregular few-flowered umbels of greenish-white flowers.

The name of this genus of plants is said to be derived from the Celtic word *sizon*, a brook, some of the species being inhabitants of running streams. It is the σισων of Dioscorides.

SPECIES I.—SISON AMOMUM. *Linn.*

PLATE DLXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1849.
Billot, Fl. Gall. et Germ. Exsicc. No. 773.

Stem erect, paniculately branched. Leaves pinnate, the lower ones with the leaflets oblong-lanceolate, slightly lobed and mucronate-serrate; upper leaves with the leaflets deeply-cleft into linear or strapshaped divaricate segments.

In hedge-banks, waysides, and waste places. Frequent in the South of England, becoming more rare towards the North. Reported from Berwickshire, on insufficient authority.

England, Scotland ? Biennial. Late Summer and Autumn.

Rootstock tapering, producing a tuft of spreading shortly-stalked leaves, with 3 or 4 pairs of pinnæ; pinnæ sessile or subsessile, abrupt or subcordate at the base, cut, finely serrated, the serratures with curved margins, and terminating in mucronate points. Flowering-stem 1 to 3 feet high, with leaves similar to the root-leaves, but with the pinnæ longer and narrower (1 to 2 inches long); uppermost leaves sub-biternate, with short linear, sometimes almost filiform segments. Branches short, divaricate, with terminal and axillary stalked umbels. Umbels with the rays spreading, all unequal, the longest $\frac{3}{4}$ to $1\frac{1}{4}$ inch long; umbellules of few flowers, pedicels all unequal, the longest $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Involucre of 2 to 4 short linear subulate leaves; involucel of 2 to 4 lanceolate leaves, not half the length of the longest rays of the umbellule, and applied to them. Flowers $\frac{1}{20}$ inch across, white. Petals sub-orbicular, deeply notched, with an inflexed point. Anthers incurved. Cremocarp ovate-globular, dark chestnut-brown, with the ribs prominent and a little paler. Styles about equal to the stylopod, reflexed. Columella split to the base. Plant glabrous, rather light-green.

Extremely like Petroselinum segetum in habit, but besides the technical difference of the vittæ thickened towards the bottom and not reaching the base of the carpels, the leaves are paler green, the leaflets generally broader, the upper ones with finer segments,

the stem erect and more wiry, the branches much shorter, flexuous and spreading, and the ovary of the flowers globose, instead of oblong.

Hedge Stonewort.

French, *Sison Amome.* German, *Scheiberich.*

The fruits of this plant are aromatic and pungent when dry and ripe, but in an early stage they, like the whole herb, have a disagreeable and nauseous smell.

GENUS X.—TRINIA. *Hoffm.*

Flowers diœcious. Calyx-limb obsolete. Petals of the male flowers strapshaped, acute, with the point incurved; of the female flowers oval, truncate, apiculate, with a short inflexed point. Cremocarp oval-ovoid, laterally compressed; columella free, bipartite; mericarps with 5 equal filiform ridges, the lateral ones marginal, each ridge with a single vitta underneath it; interstices without vittæ, or sometimes with a single one. Involucre and involucel none, or of few leaves.

Biennial much-branched herbs with ternately bipinnate leaves, with linear glaucous segments, and numerous umbels of white flowers. Remarkable among the Umbelliferæ for being diœcious, and for the vittæ being under the ridges of the fruit, not in the spaces between them.

This genus of plants was named after Dr. Trinius, a celebrated Russian botanist, who has written on *Gramineæ.*

SPECIES I.—TRINIA VULGARIS. *D. C.*

PLATE DLXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1870.
Billot, Fl. Gall. et Germ. Exsicc. No. 2680 (*bis*).
T. glauca and pumila, *Reich.* Fl. Germ. Excurs. p. 473.
Pimpinella dioica, *Linn. Sm.* Eng. Bot. No. 1209.

Stem corymbosely branched. Leaves ternately bipinnate; segments linear. Flowers diœcious. Involucre none, or of a single leaf. Cremocarp with broad, blunt, elevated ridges. Plant glabrous and glaucous.

On rocks, particularly of limestone. Very local. Berry Head, Devon; Uphill and Whorle hill, Somerset; St. Vincent's Rocks, Gloucestershire, near Bristol; near Athboy, county Meath, Ireland.

England, Ireland. Biennial. Early Summer.

Root thick, fusiform, clothed at the top with numerous stiff fibres, the remains of decayed leafstalks. Radical leaves stalked, with the stalks 1 to 3 inches long, the amina rather longer than the stalk, with the lateral branches about $\frac{1}{2}$ th le ıgth of the whole; ultimate segments $\frac{1}{4}$ to 1 inch long, very slender, pointed or mucronate. Stem copiously branched from the base, with the lateral branches nearly as long as the main stem, divaricate. Umbels flat-topped in the male plants, somewhat irregular in the female; rays of the male umbels $\frac{1}{4}$ to $\frac{1}{2}$ inch long, of the female $\frac{1}{2}$ to 1 inch. Pedicels of the male flowers $\frac{1}{16}$ to $\frac{1}{8}$ inch long, those of the female $\frac{1}{8}$ to $\frac{1}{4}$ inch. Involucre (when present) of a single leaf, which is sometimes 3-cleft; involucels of 2 or 3 very short linear leaves. Flowers $\frac{1}{20}$ inch across, white. Petals in the male flowers strap-shaped, entire, incurved at the point; of the female, much broader, slightly notched, with an inflexed lobe. Cremocarp $\frac{1}{10}$ inch long, nearly twice as long as broad, with the ridges concolorous, broad, and but slightly elevated. Columella split to the base, with the segments flattened and slightly dilated. Styles very short, longer than the stylopods, divaricate, reflexed. Plant pale-green, very glaucous.

Glabrous Stonewort.

French, *Trinie.* German, *Meergrüne Trinie.*

GENUS XI.—ÆGOPODIUM. *Linn.*

Calyx-limb obsolete. Petals obovate-roundish, notched, with an inflexed point from the notch. Cremocarp oblong-ovoid, slightly laterally compressed, crowned by the much-dilated stylopods; columella free, 2-cleft; mericarps with equal filiform ridges, without vittæ; interstices without vittæ. Involucre and involucel none.

A tall herb, with triternate leaves with ovate leaflets; umbels terminal, of white slightly radiant flowers, the petals on the outside being slightly larger than those directed towards the centre of the umbellule.

The derivation of the name of this genus of plants is from αἴξ (genitive αἰγος, *aigos*), goat, and πους (*pous*), foot.

SPECIES I.—ÆGOPODIUM PODAGRARIA. *Linn.*

PLATE DLXXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1851.
Billot, Fl. Gall. et Germ. Exsicc. No. 775.

Leaves biternate, with ovate or lanceolate doubly-serrated acuminate leaflets. Involucre and involucel none.

In damp hedge-banks and by roadsides, and in cultivated ground. Common and generally distributed; possibly originally introduced.

England, Scotland, Ireland. Perennial. Summer.

Rootstock white, slender, creeping extensively. Radical leaves on stalks 4 inches to 1 foot long, the lamina deltoid in outline, 4 to 6 inches long; leaflets 2 to 4 inches long, unequal at the base, the lateral pair of each triad very shortly stalked, the terminal one conspicuously so. Flowering-stems 2 to 3 feet high; thick, hollow, strongly furrowed, corymbosely branched at the top, the uppermost ramification with the leaves at its base opposite. Umbels on long stalks, flat-topped, the rays 1 to 1½ inch long; pedicels about ¼ inch. Flowers $\frac{1}{6}$ inch in diameter, slightly radiant, white. Petals obovate-roundish, deeply notched, with an inflexed lobe. Cremocarp $\frac{1}{6}$ inch long, dark olive-brown, with the ribs rather slender, elevated, and a little paler; columella entire nearly to the apex, where it divides into 2 branches. Stylopods nearly as long as the breadth of the mericarp; styles very long, reflexed, and applied to the backs of the mericarps. Plant glabrous, green, with the under side of the leaves paler.

Common Goutweed or Goat-weed.

French, *Égopode des Goutteux.* German, *Gemeneir Gersch, oder Giersch.*

This plant is known by the names Herb Gerarde, Ash-weed or Ach-weed, and Wild Masterwort. It had a great reputation among our forefathers as a remedy in many disorders, especially the gout. Gerarde tells us that "with his roots stamped and laid upon members that are troubled or vexed with the gout, swageth the paine, and taketh away the swelling and inflammations thereof, which occasioned the Germans to give it the name Podagraria, because of his vertues in curing the gout." The other various diseases for which this plant is recommended as a specific, are too numerous to be mentioned, especially as we are now assured that its virtues were purely imaginary, and that it possesses no medical efficacy beyond the pungency found in so many of the family. Linnæus tells us that the young leaves are eaten as a green vegetable in Sweden and Switzerland. It is a coarse-growing plant and a great creeper, so that it is dangerous to admit it into gardens, for when once there it can scarcely be eradicated. It is sometimes called Bishop's-weed, from the fact of its being often found on old ecclesiastical ruins.

GENUS XII.—CARUM. *Linn.*

Calyx-limb obsolete. Petals obovate, notched, with a large inflexed point from the notch. Cremocarp ovoid or oblong-ovoid, laterally compressed; columella free, 2-cleft; mericarps with 5 filiform equal ridges, the lateral ones marginal; interstices each with 1 to 3 vittæ. Seed flat on the inner side (that towards the columella). Involucres various.

Plants of various habit, generally with finely-divided leaves and terminal compound umbels of white slightly radiant flowers.

This genus of plants is named from the place whence it was brought and where it still abounds—*Caria*, in Asia Minor.

SPECIES I.—CARUM VERTICILLATUM. *Koch.*

PLATE DLXXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1873.
Billot, Fl. Gall. et Germ. Exsicc. No. 1885 (*bis*).
Sison verticillatum, *Linn. Sm.* Eng. Bot. No. 395.
Bunium verticillatum, *Gr. & Godr.* Fl. de Fr. Vol. I. p. 729.

Root of thickened clavate fibres. Leaves mostly radical, subcylindrical in outline, pinnate, with the pinnæ short, divided to the base into numerous setaceous linear very acute segments, spreading on all sides, so as to appear whorled. Involucre and involucel of numerous lanceolate acuminate subscarious leaves.

In moist meadows. Local, and confined to the West coast, where it occurs in Wales, the Lake district, and abundantly in the south-western counties of Scotland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Root of numerous fibres, 1 to 2 inches long, increasing in width towards the apex. Stem erect, 1 to 2 feet high, slightly branched, surrounded at the base by the fibrous remains of decayed leaves. Radical leaves 2 to 12 inches long, with numerous pairs of pinnæ split up into very slender segments, which surround the petiole, as if in whorls; lowest whorls small and distant, all slightly curving towards the apex of the leaf; stem-leaves few, similar to the radical ones, the upper ones very small, with dilated petioles. Umbels regular, flat-topped, the rays $\frac{3}{4}$ to $1\frac{1}{2}$ inch long; umbellules many-flowered, the rays about $\frac{1}{4}$ inch long; leaves of the involucels not half the length of the rays; flowers white, $\frac{1}{10}$ inch across, slightly radiant. Petals obcordate, notched, with an inflexed point. Stamens about as long as the petals. Cremocarp ovate-ovoid, compressed, yellowish-brown, with the ribs paler and strongly marked; vittæ very large, filling up the entire space between the ridges; columella split about one-third of the way down. Styles curved outwards, about half as long as the cremocarp. Plant glabrous bright-green.

Whorled Caraway.

French, *Carum verticillé*. German, *Quirlblättrige*

SPECIES II.—CARUM CARVI. *Linn.*

PLATE DLXXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1872.
Billot, Fl. Gall. et Germ. Exsicc. No. 1886.
Bunium Carvi, *Bieb. Gr. & Godr.* Fl. de Fr. Vol. I. p. 729.

Root a tapering tap-root. Leaves radical the first year, narrowly triangular in outline, bipinnate, again cut into strapshaped pointed segments; segments nearly in one plane; stem-leaves numerous. Involucre and involucel none, or of single leaves.

In waste places and pastures. Not uncommon, but with little claim to be considered truly native. In Yorkshire and Lincolnshire, however, it appears perfectly naturalized.

[England, Scotland.] Biennial. Summer.

Root fusiform, with a brownish wrinkled rind, producing numerous stalked radical leaves, 6 to 9 inches long; pinnæ numerous, again pinnate, with the segments wedge-shaped, unequally partite, and cleft. Stem 1 to 2 feet high, erect, striate, corymbosely branched, with very numerous spreading-ascending branches. Umbels slightly irregular, the rays $\frac{3}{4}$ to $1\frac{1}{2}$ inch long; umbellules rather irregular, rays $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Flowers $\frac{1}{10}$ inch across, white, distinctly radiant. Cremocarp rather more than $\frac{1}{8}$ inch long, resembling that of C. verticillatum, but rather narrower in proportion to its length, and with the styles not $\frac{1}{4}$ the length of the cremocarp, and the vittæ considerably smaller in diameter. Plant glabrous, bright-green, the lower leaves soon turning yellow, or tinged with red.

Common Caraway.

French, *Carum caroi.* German, *Gemeiner Kümmel.*

No part of this plant is so familiar to us as the fruits, which are vulgarly called seeds, which, from the warm, pleasant, aromatic oil they contain, are much used in confectionery as an addition to cakes, and largely as a nucleus for the balls of sugar so well liked by all children, and called caraway comfits. The practice of putting them into cakes is very old, those given to the farm labourers at harvest home and wheat-sowing, in Tusser's time, being flavoured with caraways. They are sometimes put in beer, and are sold largely for that purpose. The essential oil yielded by these fruits is antispasmodic and carminative: one pound of the seeds is said to yield four ounces of the oil. It is admitted into the British Pharmacopœia as a medicine. In Germany, the fruits fresh and finely powdered and mixed with a small quantity of ginger and salt, are spread on bread and butter and eaten daily, especially in the morning and just before going to bed at night, as a domestic remedy for hysterics. The dish of caraways with which Justice Shallow is said to have regaled Falstaff is usually supposed to have been the tender leaves, which used to be boiled and eaten as a vegetable; but we incline to think it was some form of confectionery into which the fruits entered; the invitation

reads to us more like one to a dessert than a dinner, and would include fruit and sweetmeats. He says: "Nay, you shall see mine orchard, where, in an arbour, we will eat a last year's pippin of my own grafting, with a dish of caraways, and so forth."

Parkinson tells us that the roots of the Caraway are excellent boiled, and are better eating than parsnips; they are still eaten in northern Europe. The young leaves form a good salad, and the larger ones a useful vegetable. The plant is cultivated largely in Suffolk and Essex, where it is usually grown from seed with coriander or teazles, or with both. The produce of Caraway on very rich old leys, on the low lands of Essex, has often been 20 cwt. to the acre. There is always a demand for the fruits in the London market.

SPECIES III.—CARUM BULBOCASTANUM. *Koch.*

PLATE DLXXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1874.
Billot, Fl. Gall. et Germ. Exsicc. No. 3394.
Bunium Bulbocastanum, *Linn.* *Sm.* Eng. Bot. No. 2862, and *Bab.* Man. Brit. Bot. ed. v. p. 145. *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 730.

Rootstock an irregularly sub-globular tuber. Radical leaves 1 or 2, deltoid in outline, ternately bipinnate, with the segments strap-shaped or elliptical-strapshaped, all in one plane; stem-leaves numerous. Involucre and involucels of numerous linear strap-shaped leaves. Cremocarp not attenuated towards the apex; interstices with a single vitta; styles reflexed; stylopods tumid.

In chalky fields. Rare. In Hertfordshire and Cambridgeshire, where it is rather plentiful on arable land near Cherry Hinton. Also reported from the counties of Middlesex and Bedford, but the first of these seems a very doubtful locality.

England. Perennial. Summer.

Rootstock fleshy-farinaceous, with an irregular deep-brown exterior, varying from the size of a small nut to that of a walnut. Stem very slender where it leaves the rootstock, gradually enlarging in size, and usually twisted between the deeply buried rootstock and the surface of the ground, from whence it is erect, 6 inches to 2 feet high, slightly branched in a corymbose manner. Radical leaves on long stalks, which are twisted between the rootstock and the surface of the ground, the lower pair of pinnæ rather remote from and much larger than the others, the pinnæ wedge-shaped or rhomboidal, cut into rather short segments; stem-leaves similar, but with short stalks, dilated at the base or in the upper ones throughout. Umbels regular, of numerous rays, $\frac{3}{4}$ to $1\frac{1}{2}$ inch long; umbellules many-flowered, with the rays $\frac{1}{2}$ to $\frac{1}{3}$ inch long. Involucre and involucels with the leaves herbaceous with scarious margins, those of the involucels about as long as their rays. Flowers $\frac{1}{10}$ inch across, white, slightly radiant. Petals obcordate,

with an inflexed point. Stamens incurved, not projecting beyond the petals. Cremocarp $\frac{1}{6}$ inch long, elliptical or oblong-ovoid, slightly compressed, much longer and narrower than in the two preceding species, deep chestnut-colour, with the ridges pale and slender. Styles short, reflexed, longer than the swollen stylopods. Plant glabrous, dark-green.

Great Earth-nut.

French, *Terrenoix commune.* German, *Knollentragender Kümmel.*

The roots of this plant are esculent, but until lately were supposed not to grow wild in Britain. It is called by the Italians *Pancascole*, a name signifying bread and cheese, the deficiency of which it supplies either raw or boiled, and somewhat resembles the chestnut in flavour.

GENUS XIII.—BUNIUM. *D. C.*

Calyx-limb obsolete. Petals obovate, emarginate, with an inflexed lobe. Cremocarp oblong-ovoid, attenuated towards the apex; columella bifid; mericarps with 5 equal filiform ridges; interstices each with 2 or 3 vittæ; inner face channelled. Seed channelled on the inner side (that towards the columella). Involucres none, or of few leaves.

Plant with exactly the habit of the tuberous Cara, from which it is artificially separated by the seed having a longitudinal furrow on the inner side, on which account it is sometimes removed to the Scandicineæ; but the furrow is much shallower than in that tribe, and in other respects the plant agrees too closely with Carum for so wide a separation.

The origin of the name of this genus is possibly from the word βουνος (*bounos*), a hill or elevated spot, the plant loving dry situations.

SPECIES I.—BUNIUM FLEXUOSUM. *With.*

PLATE DLXXXIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2682.
Conopodium denudatum, *Koch. Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 745.
Carum flexuosum, *Fries*, Sum. Veg. Scand. pp. 24, 180.

Rootstock an irregularly sub-globular tuber. Leaves deltoid in outline, ternately bipinnate, with the segments strapshaped or elliptical-strapshaped. Involucre none, or of 1 to 3 leaves; involucel of 1 to 7 linear-strapshaped leaves. Umbels pendulous before flowering. Flowers monœcious. Cremocarp attenuated towards the apex; interstices between the ridges each with 2 or 3 vittæ. Styles erect; stylopods conical.

In fields and open places in woods. Very common and generally distributed.

England, Scotland, Ireland. Perennial. Spring and Summer.

Rootstock a roundish chestnut-coloured tuber, closely resembling that of Carum Bulbocastanum, to which, indeed, the plant bears a striking resemblance. The radical leaves are very similar, having the ultimate segments elliptical-strapshaped; the stem-leaves, however, have the segments considerably narrower and longer, sometimes much longer. The umbels are very similar, but the flowers are generally rather smaller. The flowers are monœcious in all the specimens I have examined, the female more numerous than the male, which have no inferior ovary; petals of the female flowers larger and more obovate than in the male, in which they are scarcely notched. The cremocarp, however, is very different, being elliptical-ovoid, tapering so much towards the apex that it almost forms a beak, of a deeper and more purple-brown, the ridges concolorous and very slightly marked, and the inner side of the albumen is slightly furrowed. The stylopods are conical, and the styles in fruit are erect and parallel.

Common Earth-nut.

French, *Suron-Terrenoix.* German, *Erdnuss.*

The common names of this plant in England are various. It is known as earth-nut, pig-nut, ar-nut, kipper-nut, hawk-nut, jar-nut, earth-chestnut, and ground-nut. Though really excellent in taste and unobjectionable as food, this nut is disregarded in England by all but pigs and children, both of whom appreciate it and seek eagerly for it. Dr. Withering says, the roots, raw, boiled, or roasted, are little inferior to chestnuts, and would form an excellent addition to our winter desserts. In the time of Gerarde their merits seem to have been known, for he says: "These herbes do grow in pastures and cornfields almost everywhere; there is a field adjoining to Highgate on the right side of the middle of the village, covered over with the same, and likewise in the next field to the conduit heads by Maribone, near the way that leads to Paddington by London. The root is good roasted for divers complaints. The Dutch people doe use to eat them boiled and buttered as we do parsneps and carrots, which so eaten comfort the stomach, and yield great nourishment." In Sweden they constitute an article of trade; in Holland and some parts of the Alps they are added to soups and broths with advantage. John Ray, in writing of the wonderful adaptation of the forms of animals to their modes of living, specially mentions the marvellous instinct displayed by pigs in their search after that portion of their food, for which they must burrow in the ground with their snouts. After stating that in some places they are employed instead of dogs in hunting for truffles and morels, he goes on to say: "So I have myself observed, that in pastures where there are *earth-nuts* to be found up and down in several patches, though the roots lie deep in the ground and the stalks be dead long before and quite gone, the swine will, by their scent, easily find them out, and root only in those places where they grow."

GENUS XIV.—PIMPINELLA. *Linn.*

Calyx-limb obsolete. Petals obovate or oval, notched, with an inflexed lobe from the notch. Cremocarp ovoid, laterally compressed; columella free, 2-cleft; mericarps with 5 equal filiform ridges, the lateral ones marginal; interstices each with 2 to 4 vittæ. Involucre and involucels none.

Herbs with pinnate radical leaves, with the leaflets serrate or more or less deeply divided. Umbels terminal, regular, many-rayed. Flowers often polygamous, white, rarely pink or yellowish.

It is conjectured that the origin of the name of this genus of plants is an alteration from *bipennula*, bipinnate, in allusion to the form of the leaves.

SPECIES I.—PIMPINELLA SAXIFRAGA. *Linn.*

PLATE DLXXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1869.
Billot, Fl. Gall. et Germ. Exsicc. No. 777.

Stem slender, round, striate. Radical leaves numerous, pinnate, with the pinnæ oval or roundish, generally cut, sometimes so deeply pinnatifid as to be almost bipinnate, sometimes merely serrated; stem-leaves few, with the petiole dilated, particularly in the uppermost ones, their pinnæ narrower than in the radical leaves and pinnatifid. Cremocarp glabrous; stylopods sub-globular; styles reflexed, about as long as the ovary when in flower and about half as long as the full-grown fruit.

In pastures and bushy places. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock slender, with brownish wrinkled rind towards the apex, where there are a few fibrous remains of decayed leafstalks. Stem erect, 9 inches to 3 feet high, corymbosely branched. Radical leaves shortly stalked, with 4 to 8 pairs of sessile or sub-sessile pinnæ, varying much in their size and degree of division; stem-leaves few, with the leaflets always more slender and longer in proportion than in the root-leaves, and deeply pinnatifid even when the latter are merely toothed; uppermost leaves reduced to dilated sheaths, with the lamina represented by one or more linear lobes. Umbels regular, flat-topped, rays $\frac{3}{4}$ to $1\frac{1}{2}$ inch long; umbellules many-flowered, with the rays $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Involucre and involucels absent. Flowers $\frac{1}{10}$ inch across, white, slightly radiant.

Petals obovate, notched, with a small inflexed lobe. Cremocarp ⅛ inch long, olive-brown, with the ribs slender and paler; styles reflexed. Plant dark-green, generally glabrous, but sometimes pubescent.

Common Burnet Saxifrage.

French, *Boucage Saxifrage.* German, *Gemeiner Steinpeterlein*, or *Bibernelle.*

SPECIES II.—PIMPINELLA MAGNA. *Linn.*

PLATE DLXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1868.
Billot, Fl. Gall. et Germ. Exsicc. No. 776.

Stem stout, angular, furrowed. Radical leaves few, pinnate, with the leaflets ovate, the lower ones subcordate at the base, serrate, crenate-serrate, rarely cut or lobed; stem-leaves numerous, similar to the radical ones, the uppermost rather more deeply cut, rarely all of them cut or pinnatifid. Cremocarp glabrous. Stylopod globular-conical; styles longer than the ovary when in flower and about as long as the full-grown fruit.

On hedge-banks, road-sides, and bushy places. Rather local, but not common in England, except in the West. Very rare in Scotland, and apparently confined to the neighbourhood of Callander, Perthshire.

England, Scotland, Ireland. Perennial. Summer.

Very like large specimens of P. Saxifraga, but larger in all its parts; the rootstock much thicker, the stem generally 2 to 4 feet high, stouter and much more angular; the leaflets in 3 or 4 pairs, larger and broader at the base, generally less deeply cut. Umbels and flowers similar, but the latter less distinctly radiant. Cremocarp rather larger, the stylopod more tapering, and the styles much longer. Plant of a paler green colour, generally glabrous, but sometimes slightly pubescent, especially on the veins of the leaves. The flowers are usually polygamous, the outer ones perfect, the inner ones male.

Great Burnet Saxifrage, Anise.

French, *Boucage à Grandes Feuilles.* German, *Grosser Steinpeterlein.*

Both this and the former species have much the same properties, and will be recognized by most people under the name of Aniseed. The Aniseed of medicine and commerce belongs to a foreign species of the same genus: the essential oil distilled therefrom is valued as a carminative and a remedy in flatulence. In the British species the root is very hot and acrid, burning the mouth like pepper. It affords a blue essential oil, which communicates that colour to water or spirit on distillation. The root is sometimes chewed to relieve the toothache, and a decoction of it has the

reputation of removing freckles. It is said also to dissolve mucus, and on this account is used as a gargle in some cases of throat affection. In Germany it is prescribed in asthma and dropsy. A species of coccus infests the root, from which colouring matter may be procured.

GENUS XV.—SIUM. *Linn.*

Calyx-limb of 5 teeth, sometimes very small. Petals roundish-obovate, emarginate, with an inflexed lobe from the notch. Cremocarp roundish-ovoid or sub-globular, laterally compressed; columella 2-partite, the branches generally adhering to the mericarps; mericarps with 5 equal filiform ridges; interstices each with 2 to 5 vittæ. Involucre variable.

Herbs, generally growing in wet places, with pinnate leaves and serrate or cleft leaflets. Umbels many-rayed; flowers white.

We are told that the name of this genus of plants owes its origin to the Celtic word *sire*, water, in allusion to the favourite habitat of most of the species, or perhaps it may come from σειω (*seio*), I shake, as agitated by the stream in which it grows.

Section I.—EU-SIUM (Sium, *Koch*).

Cremocarp not didymous, the lateral ridges marginal; vittæ superficial; stylopod depressed.

SPECIES I.—SIUM LATIFOLIUM. *Linn.*

Plate DLXXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1877.
Billot, Fl. Gall. et Germ. Exsicc. No. 2846.

Stem erect, very thick, deeply furrowed, slightly branched at the top. Leaves pinnate; pinnæ oblong-lanceolate, evenly serrate or serrulate, in the submerged leaves sometimes pinnatifid. Umbels mostly terminal, on stalks longer than the rays. Involucre of numerous entire or remotely-serrate leaves; involucels of numerous subscarious acuminate leaves. Cremocarp longer than broad, roundish-oval-ovoid, with prominent ridges.

In ditches and still places by the edge of rivers. Rare, but widely distributed in England; rather common in the fens of the Eastern counties. In Scotland very rare: the only specimens I have seen are from the neighbourhood of Falkirk, Stirlingshire.

England, Scotland, Ireland. Perennial. Summer.

Rootstock shortly creeping, stoloniferous, with numerous long

black capillary fibres. Stem 2 to 7 feet high, frequently an inch in diameter, hollow, angular, deeply furrowed, smooth, unbranched below, slightly corymbosely branched at the top. Leaves with 4 to 6 pairs of sessile pinnæ; leaflets 2 to 6 inches long, sharply and finely serrated; when growing in water, however, the submerged leaflets are sometimes deeply cut; petioles of the lower leaves long, of the upper very short and dilated. Umbels terminal, and opposite the leaves from the outgrowth of an axillary branch, regular, flat-topped; rays very numerous, 1 to 2 inches long; pedicels $\frac{1}{6}$ to $\frac{1}{3}$ inch long. Involucres large, reflexed or spreading. Flowers white, $\frac{1}{8}$ inch across, scarcely radiant. Calyx-teeth triangular, very minute. Cremocarp $\frac{1}{5}$ inch long, compressed, dark-brown, ridges a little paler and prominent; vittæ numerous, near the surface, on which they appear as elevated lines. Plant bright-green, glabrous.

Great Water-Parsnip.

French, *Berle à Larges Feuilles.* German, *Breitblättriger Merk.*

This plant is of an acrid and poisonous quality, particularly the roots; they are noxious to cattle, rendering them quarrelsome and pugnacious. Horses and swine eat it. Sheep are not fond of it.

Section II.—BERULA. *Koch.*

Cremocarp sub-didymous, the lateral ridges not marginal; vittæ deeply seated; stylopod shortly conical.

SPECIES II.—SIUM ANGUSTIFOLIUM. *Linn.*

PLATE DLXXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1878.
Billot, Fl. Gall. et Germ. Exsicc. No. 2847.
Berula angustifolia, *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 317. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 726.

Stem erect or ascending, rather thick, furrowed, corymbosely branched at the top. Leaves pinnate; pinnæ ovate or lanceolate, irregularly serrate or crenate-serrate, or slightly lobed and unequally serrate; those of the upper leaves inciso-serrate. Umbels rather irregular, opposite the leaves, on stalks frequently not exceeding the rays of the umbel. Involucre of numerous entire or serrate or pinnatifid leaves; involucels of numerous acute leaves. Cremocarp about as long as broad, globular-ovoid, with the ridges not prominent.

In ditches and wet places. Not uncommon. Generally dis-

tributed in England; rare in Scotland, where it occurs in Dumfries, Haddington, Forfarshire, &c.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock creeping, stoloniferous, producing tufts of radical leaves and flowering-stems 1 to 3 feet high. Radical leaves erect, on long stalks, with 5 to 10 pair of ovate sessile pinnæ, 1 to 2 inches long. Flowering-stem flexuous, $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter, smooth, finely striate. Stem-leaves numerous, with the petiole dilated at the base as in the radical leaves; upper ones with the whole of the very short petiole dilated; leaflets fewer and smaller than in the radical leaves, those of the upper ones more deeply and remotely toothed. Umbels with few and somewhat unequal rays, $\frac{1}{2}$ to 1 inch long; umbellules irregular, with rather few pedicels, the longest $\frac{1}{6}$ to $\frac{1}{4}$ inch long. Leaves of the involucre variable in form, some of them often large and inciso-serrate. Cremocarp $\frac{1}{12}$ inch long, dark-brown, with the ridges concolorous; vittæ not apparent on the surface. Whole plant pale-green, glabrous.

Water-Parsnip.

French, *Berle à Feuilles Étroites.* German, *Schmalblättrige Berle.*

GENUS XVI.—BUPLEURUM. *Linn*

Calyx-limb obsolete. Petals roundish, entire or nearly so, incurved. Cremocarp oval-ovoid or oblong-ovoid, laterally compressed; columella free, bipartite or bifid; mericarps with 5 ridges, which are sometimes filiform, sometimes winged, sometimes scarcely perceptible; interstices usually each with one or more vittæ. Involucre variable.

Herbs, with entire leaves usually surrounded by a transparent cartilaginous margin, and yellowish flowers, with the involucels generally longer than the rays of the umbellules. This is one of the few genera amongst the Umbelliferæ which are really natural, and fortunately it has not been divided on account of slight differences in the fruit, such as are used to separate many of the preceding genera. The entire leaves give Bupleurum a habit very different from that of the other Umbelliferæ.

The origin of the name of this genus of plants is variously given. One author says it comes from βους (*bous*), ox, and πλευρον (*pleuron*), a rib—rib-leaved plants; while another says it is derived from βους (*bous*), an ox, and πλευρον (*pleuron*), a side; the same words, but differently considered, the latter meaning being a reference to a supposed bad quality in the plants of swelling the oxen that partake of them.

SPECIES I.—BUPLEURUM ROTUNDIFOLIUM. *Linn.*

PLATE DLXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1880.
Billot, Fl. Gall. et Germ. Exsicc. No. 1490.

Annual. Stem corymbosely or paniculately branched in the upper part. Radical leaves and lower stem-leaves obovate, the latter amplexicaul; leaves in the middle and upper part of the stem ovate-oval or roundish-oval, perfoliate: all entire, obtuse or apiculate, with 7 to 21 nerves. Involucre none; involucel of 5, rarely 3 or 4, roundish-obovate leaves, connate at the base, spreading in flower, connivent in fruit, sub-herbaceous, abruptly mucronate or shortly aristate, with 5 to 7 nerves. Cremocarp oblong-ovoid, dark-brown, not granulated, with very slender ridges and no vittæ.

In cultivated ground, especially wheat-fields in chalky and clayey soils. Rather rare, except in the South-Eastern counties, though it extends as far North as Yorkshire and Durham. Absent from the Western counties, where Somerset, Wilts, and Worcester, appear to be its Northern limits.

England. Annual. Summer and Autumn.

Stem 6 inches to 2 feet high, sparingly branched, or even simple in small examples. Leaves 1 to 2½ inches long. Umbels shortly-stalked, terminal and opposite the leaves; rays 3 to 10, nearly equal, ¼ to ½ inch long; pedicels numerous, equal, very short. Leaves of the involucel ¼ to ½ inch long, green tinged with yellow on the inside, so that the involucel somewhat resembles the corolla of a flower. Petals yellow, roundish, with a broad incurved point. Cremocarp ⅛ inch long, sometimes appearing granulated when dry, but not so when fresh. Plant glabrous and glaucous. A very handsome plant, with the habit of a Euphorbia.

Perfoliate Hare's-ear, Thorough-wax.

French, *Buplèvre à Feuilles Rondes.* German, *Rundblättriges Hasenöhrchen.*

SPECIES II.—BUPLEURUM ARISTATUM. *Bartl.*

PLATE DXC.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1888.
Billot, Fl. Gall. et Germ. Exsicc. No. 369.
B. Odontites, *Sm.* Eng. Bot. No. 2468 (non *Linn.*).

Annual. Stems corymbosely or paniculately branched, simple in small specimens. Leaves strapshaped or oblanceolate-strap-

shaped, entire, with 3 or 5 nerves. Involucre of 3 to 5 elliptical leaves, nearly as long as the umbel-rays and involucels taken together; involucel of 5 elliptical-ovate leaves, longer than the flowers; leaves of both connivent both in flower and fruit, herbaceous, with a very narrow white scarious border, mucronate or shortly aristate, with 3 to 5 nerves united by anastomosing veins. Cremocarp shortly oblong-ovoid, dark-brown, not granulated, with very slender inconspicuous ridges; interstices each with a single vitta.

On dry sandy banks and roadsides. Very rare. Parkhill, Torquay; more plentiful in the Channel Islands.

England. Annual. Summer.

English specimens 1 to 3 inches high; the stem very slender, simple, or forked, rarely with more than a single branch; but in Jersey I collected specimens 10 inches high, with very numerous branches, which curve slightly upwards. Radical leaves in English specimens $\frac{1}{2}$ to 1 inch long, oblanceolate; stem-leaves narrowly strapshaped: in some of the Jersey plants the radical leaves are strapshaped, 2 inches long. Involucral leaves $\frac{1}{4}$ to $\frac{1}{2}$ inch long, those of the involucel $\frac{1}{8}$ to $\frac{1}{4}$ inch. Rays of the umbel 2 to 5, unequal, $\frac{1}{10}$ to $\frac{1}{4}$ inch long; pedicels very short. Flowers few, very minute, yellow; petals roundish, with a broad emarginate inflexed point. Cremocarp $\frac{1}{14}$ inch long. Plant glabrous, slightly glaucous.

Narrow-leaved Hare's-ear.

French, *Buplèvre ariété.*

SPECIES III.—BUPLEURUM TENUISSIMUM. *Linn.*

PLATE DXCI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1891.
Billot, Fl. Gall. et Germ. Exsicc. No. 778.

Annual. Stems procumbent and diffuse or erect and paniculately or racemosely branched. Leaves oblanceolate-linear, the upper ones strapshaped or linear, very acute but not aristate, with 3 nerves. Involucre of 3 to 5 unequal linear-subulate very acute leaves; involucel of 4 or 5 leaves, similar to those of the involucre, 1-nerved, longer than the flowers, connivent in flower, spreading in fruit. Cremocarp sub-globular, much compressed, dark-brown, papillose-granulated, with prominent ridges and no vittæ.

In salt marshes and waste places near the sea, and in fields and on commons inland. Rather common in the South-East of

England, having nearly the same range as B. rotundifolium, except that it occurs also in Cheshire and Lancashire.

England. Annual. Summer.

Stem sometimes erect with short paniculate branches, sometimes procumbent with elongate branches, 6 to 18 inches long. Leaves 1 to 2½ inches long, the lower ones narrowed towards the base, the upper narrowed at each end, the uppermost linear-subulate. Leaves of the involucel ⅛ to ¼ inch long. Umbels very shortly stalked, axillary and terminal, with 1 to 5 rays, the lateral ones with usually not more than 2 very short and nearly equal rays, the terminal one with the rays very unequal, the longest sometimes ½ inch long; pedicels very short. Flowers minute, yellow; petals roundish, with an entire incurved point. Cremocarp $\frac{1}{12}$ inch long, rather broader than long, covered with tubercles, which resemble grains of sand. Plant dull-green, often tinged with reddish-brown, slightly glaucous. This plant is very unlike one of the Umbelliferæ, its habit being something between Polygonum aviculare and Juncus bufonius.

Slender Hare's-ear.

French, *Buplèvre Menu.* German, *Feines Hasenöhrchen.*

SPECIES IV.—BUPLEURUM FALCATUM. *Linn.*

PLATE DXCII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1885.
Billot, Fl. Gall. et Germ. Exsicc. No. 26.

Perennial. Rootstock almost woody. Stems erect, paniculately branched. Radical leaves on long stalks, oval; stem-leaves oblanceolate, obtuse, the upper ones strapshaped, falcate, acute, 5- or 7-nerved. Involucre of 1 to 5 unequal oblong or lanceolate leaves; involucel regular, of 5 oblong abruptly acuminate leaves, nearly as long as the flowers, spreading in flower, sub-connivent in fruit. Cremocarp oblong-ovoid, dark-brown, smooth, with prominent ridges; interstices each with 3 vittæ.

In hedgerows and borders of fields. Very local, but abundant about Norton Mandeville, between Ongar and Chelmsford, Essex.

England. Perennial. Autumn.

Rootstock branched, some of the branches terminating in tufts of radical leaves on long stalks, others in erect flowering-stems 1 to 4 feet high, with short alternate branches in the upper portion. Leaves sub-coriaceous, 2 to 4 inches long; lower stem-leaves attenuated into an indistinct petiole, the upper ones sessile. Leaves

of the involucel ¼ inch long. Umbel nearly regular, of 6 to 10 rays, ½ to 1 inch long; umbellules many-flowered, nearly regular, the pedicels $\frac{1}{16}$ to ¼ inch long. Flowers very minute, bright-yellow. Cremocarp ⅛ inch long. Styles reflexed, reaching nearly to the border of the stylopod. Plant glabrous, slightly glaucous.

Falcate-leaved Hare's-ear.

French, *Buplèvre des Haies.* German, *Sichelförmiges Hasenöhrchen.*

Tribe IV.—SESELINEÆ.

Cremocarp not compressed either laterally or dorsally (having a roundish cross-section); columella usually distinct; mericarps with 5 primary ridges, ridges equal (or the lateral ones a little broader), all filiform or winged, the lateral ones marginal, not more winged than the others. Seed flat on the inner face. Flowers in regular compound umbels.

GENUS XVII.—ŒNANTHE. *Linn.*

Calyx-limb 5-toothed. Petals obovate, notched, with an inflexed lobe from the notch. Cremocarp sub-cylindrical or prismatic, not compressed, oblong-ovoid or -turbinate, crowned by the long erect styles; columella obliterated; mericarps more or less corky, with 5 convex obtuse ridges, the lateral ones marginal and a little broader than the others; interstices each with a single vitta. Involucre variable and inconstant.

Herbs, growing in wet places, with the radical and lowest stem-leaves triangular, bi- or tri-pinnate; the uppermost stem-leaves narrower, smaller, and often simply pinnate. Flowers white, more or less radiant, in compound usually regular umbels.

The name of this genus of plants comes from the words οινος (*oinos*), wine, and ανθος (*anthos*), a flower, in allusion to the supposed vinous scent of some of the species.

Section I.—EU-ŒNANTHE.

Central flowers of the umbellules subsessile, perfect, exterior flowers radiant, male. Umbel stalked, terminal. Root fasciculate, fibres more or less thickened.

SPECIES I.—ŒNANTHE FISTULOSA. *Linn.*

PLATE DXCIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1898.
Billot, Fl. Gall. et Germ. Exsicc. No. 991.

Root-fibres generally thickened, fusiform or cylindrical, the subterranean part of the stem with numerous capillary fibres and stolons. Stem erect, fragile, hollow, with a large bore, constricted at each node, slightly branched. Leaflets of the radical leaves pinnatifid, cut or entire, with strapshaped or elliptical, short, rather obtuse lobes; petioles of the stem-leaves hollow, usually much longer than the pinnate portion, which has 2 or 3 pairs of narrowly strapshaped elongated leaflets. Terminal umbel with 3, the others with 3 to 8 rays; umbellules dense, globose in fruit. Involucre none. Cremocarp* oblong, obconic, angular, without a callous ring at the base, not contracted at the summit. Styles equalling or slightly exceeding the fruit.

In ditches and wet places. Common in England, rare in Scotland; where, however, it occurs, and reaches as far North as the counties of Dumbarton and Elgin.

England, Scotland, Ireland. Perennial. Summer.

Root-fibres generally deeply buried in the mud, often only slightly thickened, and sometimes the thickened fibres appear to be entirely wanting; above this the stem is clothed with radical fibres, and produces elongated stolons, terminating in a tuft of small pinnate leaves. Root-leaves triangular in outline, with the leaflets always short, but varying in the degree of incision, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, decayed by the time of flowering. Flowering-stem 1 to 3 feet high, as thick as a swan-quill, with the substance of the tubular stalk very thin and compressible, slightly constricted at each node. Petioles 2 to 9 inches long, the pinnæ $\frac{1}{4}$ inch to 2 inches, each pair distant about its own length from the one below it. Umbels terminating the stem, but afterwards appearing lateral, from the growth of axillary branches, the one which opens first with rarely more than 3 rays, which are $\frac{1}{2}$ to $1\frac{1}{2}$ inch long; umbellules $\frac{1}{2}$ to $\frac{3}{4}$ inch across, slightly convex in flower, distinct from each other; exterior flowers $\frac{1}{4}$ inch in their longest diameter, conspicuously radiant; fertile flowers much smaller: all the umbels, after the one which termi-

* The shape of the cremocarp in the descriptions of Œnanthe applies to that of the outer fruits of the umbellules, as the interior ones are generally distorted by pressure.

nates the main stem, generally consist entirely of sterile flowers; fruit-umbellules dense, spherical, $\frac{3}{8}$ to $\frac{1}{2}$ inch in diameter. Cremocarp $\frac{1}{5}$ inch long, angular, pale olive-brown, crowned by the erect rigid spine-like styles; mericarps not separating from each other. Plant dull-green, slightly glaucous, glabrous.

Common Water-Dropwort.

French, *Œnanthe Fistuleuse.* German, *Röhrige Pferdesaat.*

This plant has a hot nauseous taste and unpleasant smell, like many others of the same order. The roots and herbage are said to be poisonous; but experiment does not confirm this.

SPECIES II.—ŒNANTHE PIMPINELLOIDES. *Linn.*

PLATE DXCIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1893.
Billot, Fl. Gall. et Germ. Exsicc. No. 3094.

Root-fibres slender, with an ovoid or sub-globular, usually abrupt enlargement towards the extremity. Stem without capillary root-fibres or stolons above the tubers, erect, tough, not constricted at the nodes, slightly branched in the upper part. Leaflets of the radical leaves pinnatifid, cut or entire, with strap-shaped or elliptical short rather acute lobes; upper stem-leaves longer than their solid petioles; leaflets or ultimate lobes linear, elongate, acute. Umbels of 6 to 12 rays, slightly thickened in fruit; umbellules dense, flattish above when in fruit. Involucre of 1 to many deciduous leaves (sometimes absent?). Cremocarp cylindrical-prismatic, with a callous ring at the base, not contracted at the apex. Styles $\frac{3}{4}$ the length of the fruit.

In dry meadows and on hedge-banks. Rare. Found near Plymouth, Devon; Fifehead Neville, Dorset; Shanklin, Bembridge, and Niton, Isle of Wight; Blue Anchor, West Somerset; Cruckbarrow Hill and at Powick, Worcestershire; Forthampton, Gloucestershire; also in mainland Hants, Sussex, and Essex.

England, Ireland. Perennial. Summer.

Root-fibres 1 to 3 inches long, with a tuber-like enlargement $\frac{1}{4}$ to $\frac{1}{2}$ inch long, at some distance from the base. Stem 1 to 3 feet high, furrowed, corymbosely branched towards the top, or nearly simple. Segments of the radical leaves $\frac{1}{5}$ to $\frac{3}{4}$ inch long, of the stem-leaves $\frac{1}{2}$ to 2 inches; the root-leaves are generally decayed by the time of flowering; uppermost stem-leaves often reduced to naked petioles. Rays of the umbels $\frac{1}{2}$ to $\frac{3}{4}$ inch long, very slightly thickened in fruit; umbellules so numerous as to be contiguous,

$\frac{1}{4}$ to $\frac{1}{2}$ inch across, less conspicuously radiant than in Œ. fistulosa. Cremocarp light-brown, $\frac{1}{8}$ inch long, with the ridges slightly prominent, obtuse, the marginal ones corky, thickened, and contiguous; and connected at the base by a whitish corky ring, which however is scarcely observable when the fruit is quite mature. Plant glabrous, green.

Callous-fruited Water-Dropwort.

French, *Œnanthe faux Boucage.*

SPECIES III.—ŒNANTHE SILAIFOLIA. *Bieb.?*

PLATE DXCV.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1893?
Billot, Fl. Gall. et Germ. Exsicc. No. 3393.
Œ. peucedaniifolia, *Sm.* Eng. Bot. No. 347 (non *Poll.*).
Œ. Smithii, *H. C. Watson*, Phyt. 1845, p. 14.

Root-fibres clavate, fusiform or fusiform-cylindrical. Stem erect, tough, furrowed, hollow, not constricted at the nodes, without stolons or capillary fibres above the tubers. Radical leaves with the leaflets very deeply pinnatifid, cut or entire, with short strap-shaped-linear acute lobes; upper stem-leaves longer than their solid sheathing petioles, with the leaflets or ultimate lobes elongate linear-strapshaped and acute. Umbels of 4 to 12 rays, thickened in fruit; umbellules dense, convex above in fruit. Involucre of 1 to many leaves (sometimes absent?), leaves generally deciduous. Cremocarp obconical-prismatic, not contracted at the top, with a callous ring at the base. Styles about two-thirds the length of the fruit.

In moist meadows and damp places by the sides of roads and ditches. Rare. It occurs in Kent, Sussex, Surrey, Huntingdon, Cambridgeshire (where it is now believed to be extinct), Gloucestershire, Herefordshire, Worcestershire, Leicestershire, Oxfordshire, and Bedfordshire.

England. Perennial. Summer.

Very similar to Œ. pimpinelloides, but generally a larger plant, with stouter, more branched stems, and the segments of the lower and upper leaves more alike; the root fibres, though very variable in form, thickening gradually, and from the base, while in Œ. pimpinelloides the enlargement is generally like a large bead attached by a thread. The rays of the umbel are longer and not so numerous, so that the umbellules are not contiguous, more thickened in fruit, especially towards the apex; pedicels more thickened in fruit. The cremocarp is more narrowed towards the

base, with a less evident callous ring, and with the styles and calyx-teeth shorter in proportion.

Griesbach describes the petals of Œ. silaifolia as "sub-equal" (Spic. Fl. Rum. et Bith. Vol. I. p. 357), and the segments of the leaves lanceolate: this does not apply to the English plant so called, which is probably not the Œ. silaifolia of Bieberstein: it is, however, that of the Italian botanists, as proved by the Tuscan specimen in Billot's Fl. Exsicc., and apparently also that of Koch and Godron and Grenier, judging from their descriptions.

The true Œ. peucedanifolia has the root-fibres thickest between the base and the middle, which I have not seen in Œ. silaifolia, except in young plants previous to flowering, and the fruit is oblong-ovoid, contracted at the top, and bears much resemblance to that of Œ. Lachenalii.

According to specimens from Armenia, Œ. media, Griesbach (Balansa Fl. Armen. No. 52), has the segments of the lower leaves short and broad and the fruit subquadrate-obconic, and is very different from Œ. media, Boreau (Bill. Exsicc. No. 1205), which seems to be scarcely distinct from Œ. peucedanifolia, Poll. Œ. media, Reich. (Ic. Vol. XXI. Tab. 1897) appears to be our Œ. silaifolia.

If it can be ascertained that Bieberstein's plant is specifically different from the present species, Mr. H. C. Watson's name "Œ. Smithii" must be adopted.

Sulphurwort Water-Dropwort.

French, *Œnanthe à Feuilles de Silaus.*

SPECIES IV.—ŒNANTHE LACHENALII. *Gmel.*

PLATE DXCVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1892.
Billot, Fl. Gall. et Germ. Exsicc. No. 992.
Œ. pimpinelloides, *Sm.* Eng. Bot. No. 347.

Root-fibres slender, terete-cylindrical or cylindrical-clavate. Stem erect, tough, furrowed, hollow, not constricted at the nodes, without stolons or capillary fibres above the tubers. Radical and lower stem-leaves with the pinnæ entire or more or less deeply divided into short, elliptical, or oval-oblanceolate blunt mucronate lobes; upper stem-leaves longer than their solid sheathing petioles, with the leaflets or ultimate lobes elongate linear-strapshaped and acute. Terminal umbel of 6 to 10 rays, not thickened in fruit; umbellules lax, hemispherical in fruit. Involucre of numerous usually persistent leaves. Cremocarp shortly obovate-ovoid, rounded and contracted at the apex. Styles about three-quarters of the length of the cremocarp.

By the sides of brackish ditches, or more rarely in fresh-water marshes. Not uncommon, and generally distributed in England; rare in Scotland, where it occurs in the West Lowlands, Argyle, Dumbarton, and Haddington.

England, Scotland, Ireland. Perennial. Summer and Autumn.

This plant bears a very close resemblance to the two preceding. The root-fibres, however, are generally not at all thickened, but taper gradually from near the base to the apex; occasionally, however, there is a slight enlargement, and Mr. H. C. Watson gives figures of root-fibres of this species, which are as much thickened as those of Œ. silaifolia (Phyt. 1846, p. 398). The dissimilarity in shape of the segments of the lower and upper leaves is sufficient to distinguish it from Œ. silaifolia, even when not in fruit, and the umbellules not being contiguous from Œ. pimpinelloides. The flowers are smaller, less radiant, and the exterior petals are more orbicular, with the apical notch more completely concealed by the overlapping of the lobes than in either of these. When the plant is in fruit, it cannot be confounded with any other British species, as the fruit is shorter, $\frac{1}{10}$ inch long, with a circular and not a prismatic cross-section, and with an oval-obovate longitudinal section; the ridges are less corky, there is no thickened ring at the base, and the calyx-teeth rise from the centre of the rounded top instead of being a continuation of the nearly straight sides: the cross-section of the fruit at the origin of the calyx-teeth in Œ. silaifolia and Œ. pimpinelloides is as large as or larger than that taken at any other point in the cremocarp, while in Œ. Lachenalii the cross-section taken at the origin of the calyx-teeth is not half the diameter of that at the widest part of the mature cremocarp.

Parsley Water-Dropwort.

French, *Œnanthe de Lachenal.* German, *Lachenal's Pferdesaat.*

SPECIES V.—ŒNANTHE CROCATA. *Linn.*

PLATE DXCVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1675.

Root-fibres very large, much thickened, fusiform or oblong- or ovate-fusiform. Stem erect, tough, branched, sulcated, without stolons or radical fibres above the tubers. Ultimate leaflets of the radical leaves roundish or ovate, more or less deeply cut, with blunt segments; upper stem-leaves with the leaflets rhomboidal or wedge-shaped, cut, with the segments blunt or acute. Umbels of very numerous rays, slightly thickened after flowering; umbel-

lules in fruit rather lax, slightly convex above. Cremocarp oblong-ovoid or oblong-cylindrical, not contracted at the apex, without a distant callous ring at the base. Styles two-thirds the length of the fruit.

In wet places. Common and generally distributed in England; more rare in Scotland, though extending as far North as Moray, Aberdeen, and Argyleshire.

England, Scotland, Ireland. Perennial. Summer.

Root-fibres very large, often as thick as a man's finger, with yellow or colourless juice. Stems erect, 2 to 4 feet high, with the stem very stout and much branched towards the upper part, tough, hollow. Leaves very large, broadly triangular in outline, twice- or thrice-pinnate, the radical and lower ones on rather short sheathing petioles; upper ones with the petioles very short and dilated throughout; segments of the stem-leaves narrower than those of the root-leaves. Umbels of 12 to 40 rays, 1 to 3 inches long; umbellules rather lax, slightly radiant. Involucre absent or of many leaves; involucels of numerous persistent leaves. Cremocarp light-brown, striated, $\frac{1}{5}$ to $\frac{1}{6}$ inch long. Plant deep-green, glabrous, shining.

I have a specimen from Mr. J. G. Baker, collected at Eaglescliff, Durham, which quite agrees with Bourgeau's Portuguese specimens named Œ. apiifolia by Dr. Cosson: but the narrower and more elongate form of fruit, which alone distinguishes it from the ordinary Œ. crocata, seems to depend solely on the lesser development of the mass of corky tissue at the angles of the commissural face of the mericarps.

Hemlock Water-Dropwort.

French, *Œnanthe à Suc Jaune.*

This is one of the most poisonous of our native plants. It somewhat resembles celery in its general appearance, and has been mistaken for that esculent with terrible results. Possibly none of our native plants have been the cause of fatal accidents so frequently as this. The utmost caution is therefore necessary in observing the distinctive characters of wild plants before partaking of them; and this can scarcely be secured without that cultivation of the observing faculties which some knowledge of botany necessitates, and which is best effected during the early years of education. The authenticated instances of poisoning from the use of this plant are very numerous. During the last war with France, some French prisoners, who were allowed to walk about Pembroke, dug up a quantity of the plant, mistaking it for celery, and ate the leaves with their bread and butter, and likewise some of the roots. Two of them died shortly afterwards, and the rest were seriously ill from the effects of the poison. Sir William Watson relates a case of eight young lads near Clonmel, in Ireland, mistaking its roots for those of the water-parsnip, and eating them; in consequence of which five of them died. Mr. Miller informed the same author that a whole family at Battersea were poisoned by it. So virulent are the properties of this plant, that its scent is said

to produce giddiness; yet it has been continually used in medicine. In Westmoreland, the country people apply a poultice to the ulcer which sometimes forms in the hoof of horned cattle. Externally it may be safely applied, but internally it is decidedly a dangerous remedy. Watson records, that in 1758 four spoonfuls of the juice occasioned the death of a person at Havant, in Hampshire. Dr. Pulteney observes, that in this instance, as well as in all cases which he has observed, the sufferer is affected with locked jaw. In some parts of France it is used to destroy moles. In Pembrokeshire, where it grows extensively, it is known as the "five-fingered root." The best remedy for its effects on the human constitution is a speedy emetic.

Section II.—PHELLANDRIUM. *Linn.*

Flowers of the umbels all perfect and nearly similar. Umbels rather irregular, lateral, shortly stalked. Root-fibres all slender, capillary.

SPECIES VI.—ŒNANTHE PHELLANDRIUM. *Lam.*

PLATE DXCVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1894.
Billot, Fl. Gall. et Germ. Exsicc. No. 2472.
Phellandrium aquaticum, *Linn.* *Sm.* Eng. Bot. No. 648.

Rootstock very short, fusiform. Stem erect. "Submerged leaves multifid, with capillary diverging segments" (Bab.). Leaves, when growing out of the water, tripinnate, with the ultimate leaflets divaricate, triangular or wedgeshaped, doubly pinnatifid, the ultimate segments blunt, mucronate. Cremocarp oblong-cylindrical or oblong-ovoid, without a callous ring at the base. Styles about half as long as the cremocarp.

In wet places and in still water. Not uncommon in England; rare in Scotland, where it is said to occur in the counties of Edinburgh and Argyle, but I have seen no specimens from either.

England, Scotland, Ireland. Biennial or Perennial (?). Summer and Autumn.

Rootstock short, vertical, tapering at the bottom, with numerous slender fibres, none of which are thickened as in all the previous species. Stem 1 to 4 feet high, very thick in proportion to its height, with numerous spreading branches. Leaves cut into very fine divisions, with very small ultimate lobes. Stalk of the umbel equal to or shorter than its rays, which are from 7 to 10; umbellules compact, slightly radiant. Involucre absent; involucels of many leaves. Cremocarp reddish-brown, $\frac{1}{4}$ to $\frac{1}{3}$ inch long, the shorter forms elliptical-ovoid, the longer elliptical-cylindrical, slightly attenuated at the base and apex, crowned by the 5 small

triangular-subulate calyx-teeth; the exterior fruits on pedicels as long as themselves. Plant bright-green, glabrous.

There are two forms of fruit in this species, apparently depending (as in Œ. crocata) upon the greater or less development of the lateral masses of corky tissue.

Fine-leaved Water-Dropwort.

French, *Œnanthe Phillandre.* German, *Fenchelsamige Pferdesaat.*

Linnæus informs us that the horses in Sweden are seized with a kind of palsy on eating this plant: hence Withering and Sibthorp have named it *horse-bane.* It is common in ditches and streams in England, and was at one time used medicinally. It is said to have been useful in asthmas, phthisis, and intermittent fevers, and has also been administered in cases of cancer and ulcers. The fruit causes giddiness when swallowed; and other symptoms of narcotic irritant poisoning have followed the use of the herb, even in small quantities.

SPECIES (?) VII.—ŒNANTHE FLUVIATILIS. *Coleman.*

PLATE DXCIX.

Stem decumbent, floating, the flowering portion only rising out of the water. Submerged leaves bipinnate, with the segments wedge-shaped or narrowly rhomboidal, translucent, cut at the apex into linear acute parallel segments. Leaves out of the water bipinnate or pinnate, with the leaflets not divaricate, narrowly rhomboidal, pinnatifid; segments subacute. Cremocarp oblong-cylindrical, without a callous ring at the base. Styles about one-third the length of the cremocarp.

In running water. Not uncommon in the South-East of England; occurring in Somerset, Dorset, Hants, Kent, Surrey, Essex, Middlesex, Bucks, Cambridge, Oxford, Leicester, Hertford, and probably in several of the adjacent counties.

England. Biennial (?) or Perennial. Autumn.

Stem elongated, flexible, with numerous root-fibres, producing submerged leaves with leaflets $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, cut into parallel segments, deep-green and without epidermis. The part of the stem which flowers rises out of the water; the leaves and flowers are extremely like those of Œ. Phellandrium, except that the leaves are less finely divided and have the leaflets and segments not divaricate. The rays of the umbel are usually longer and stouter; the fruit generally longer, about $\frac{1}{4}$ inch long, and narrower in proportion, deeper in colour.

It must be borne in mind that the differences between this plant and Œ. Phellandrium are such as might be produced by the circumstances under which they have grown; so that until we have

seen Œ. fluviatilis growing in still water, and Œ. Phellandrium growing in running water, it would be premature to decide whether they be not (in spite of the great difference in habit) merely states of one species. See some remarks on the mode of growth of Œ. fluviatilis, by Mr. G. E. Varenne in Phytologist, 1852, p. 673.

River Water-Dropwort.

GENUS XVIII.—ÆTHUSA. *Linn.*

Calyx-limb obsolete. Petals obovate, notched, with an inflexed lobe from the notch. Cremocarp ovate-globose, not compressed; columella free, bipartite; mericarps with 5 elevated keeled ridges, the lateral ones a little broader and marginal; interstices each with a single vitta. Involucre none; involucel dimidiate.

An annual or biennial herb, with leaves resembling parsley, but readily distinguishable by its white radiant flowers and umbellules with an involucel of a few long pendulous leaves, all on their outer sides; and by the short cremocarp with a circular cross-section.

The origin of the name of this genus of plants is the Greek word *αἴθω* (*aitho*), I burn; an acrid taste, in allusion to the qualities of the species.

SPECIES I.—ÆTHUSA CYNAPIUM. *Linn.*

PLATE DC.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1901.
Billot, Fl. Gall. et Germ. Exsicc. No. 1883.

Leaves sub-ternately bi- or tri-pinnate; the leaflets rhomboidal, narrowed towards the base and apex. Involucels dimidiate, of about 3 linear-setaceous pendent leaves, longer than the pedicels. Cremocarp ovate-globular, with thick bluntly-keeled ridges.

A weed in cultivated ground. Common, and generally distributed. Rare in the North of Scotland, though extending to Orkney.

England, Scotland, Ireland. Annual. Summer and Autumn.

Root a slender tapering taproot, whitish. Stem corymbosely branched, 3 inches to 2 feet high. Leaves with short sheathing petioles, all bipinnate, with the leaflets pinnatifid in the lower leaves, so much so that they frequently become tripinnate; leaflets of the upper leaves acuminate. Umbels small, rather irregular, with 5 to 12 widely spreading rays, $\frac{1}{4}$ to $\frac{3}{4}$ inch long; umbellules compact. Involucre none, or rarely of a single leaf; involucels of about 3 very narrow leaves, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, hanging

down from the outside of the umbellules. Flowers small, $\frac{1}{10}$ inch across, slightly radiant. Cremocarp pale-green, $\frac{1}{5}$ to $\frac{1}{6}$ inch long, attenuated towards the apex; mericarps nearly hemispherical, separating readily when ripe; the vittæ on the commissural face forming a lyre-like impression. Plant deep-green, glabrous. Stem finely furrowed, usually marked with reddish lines. Leaves thin. This plant is readily recognized by the long pendent involucels.

Common Fool's Parsley.

French, *Éthuse petite Ciguë.* German, *Hunds Gleisse.*

This plant is one of the most dangerous of its order, and is often mistaken by the ignorant and careless for the true Parsley. When eaten, it produces vomiting, giddiness, and other symptoms of narcotic irritant poisoning. A case is recorded, which happened in Germany, of a woman putting some leaves into soup in mistake for parsley, of which two of her children partook, and died in consequence. Dr. Taylor also mentions a similar instance, where some ladies, after eating some of the leaves, became sick and giddy, and did not recover for a considerable time: the roots have also the same effects when eaten. In order to avoid the disastrous results occasioned by the mistaken use of this and other plants of the same order for Parsley, it has been strongly advised to banish from the vegetable garden all but the curled and crisp-leaved varieties of Parsley, which are distinct enough in appearance not to mislead the most casual observer.

GENUS XIX.—FŒNICULUM. *Hoffm.*

Calyx-limb obsolete. Petals roundish-obovate, entire, truncate, involute. Cremocarp oblong- or elliptical-ovoid, not compressed; columella 2-partite, the branches adnate to the mericarps; mericarps with 5 prominent obtusely-keeled ridges, lateral ones a little broader and marginal; interstices each with a single vitta. Involucre and involucel none.

Large plants with shining smooth green stems and decompound leaves, with capillary segments. Flowers rather small, deep-yellow, not radiant, in large regular compound umbels.

The best authorities tell us that the name of this genus of plants comes from the word *fœnus*, usury, because the seed being sown in the earth yields or is returned with great increase: others, scarcely so trustworthy, say it is so called from *fœnum*, hay, because the smell of the plant it is thought somewhat resembles hay.

SPECIES I.—FŒNICULUM VULGARE. *Gärt.*

PLATE DCI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1930.
Billot, Fl. Gall. et Germ. Exsicc. No. 372.
F. officinale, *All. Bab.* Man. Brit. Bot. p. 148. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 323
Anethum Fœniculum, *Linn. Sm.* Eng. Bot. No. 1208.
Meum Fœniculum, *Spreng. Sm.* Eng. Fl. Vol. II. p. 85.

Leaves tripinnate, the segments linear-setaceous, not all in one plane.

In waste places, especially on banks and cliffs near the sea. Not uncommon on the English coasts, where it is probably native. It occurs also inland, but no doubt, in most of such stations, is an escape from cultivation.

England, [Scotland, Ireland.] Perennial. Summer and Autumn.

Rootstock thickened. Stem erect, thick, polished, finely striate, bright-green, with a large pith and small central bore. Leaves shortly stalked, with the petioles dilated and amplexicaul, triangular in outline, 3 or even 4 times pinnate, with very finely cut leaflets and segments, which vary considerably in length and stiffness. Umbels large, regular, of 10 to 30 slightly incurved rays, 1 to 3 inches long; pedicels $\frac{1}{5}$ to $\frac{3}{5}$ inch long. Involucre and involucel absent. Flowers small, $\frac{1}{10}$ inch across, bright-yellow. Petals entire, involute. Cremocarp greyish-olive, oblong-ovoid, scarcely laterally compressed, $\frac{1}{5}$ inch long, with rather prominent filiform ridges, very conspicuous stylopods, and very short styles. Plant deep-green, glabrous.

Common Fennel.

French, *Fenouil Officinal.* German, *Gebräuchlicher Fenchel.*

To some the scent and taste of the Fennel is anything but agreeable, though its elegant, graceful form must be admired by all. The bright golden-yellow flowers are produced in July and August, while its delicate feathery leaves appear earlier. According to the old English ballad,—

"Mirie it is in time of June,
When fenil hangith abrode in toun."

It has been cultivated from very early times, and was used with St. John's wort and other herbs to hang over doors at midsummer time to prevent witchcraft and other evil influences. In the South of France it is usual, in addition to placing it over the doors, to strew it around the bed and to lay it under the pillow, especially on the Eve of St. John. As a sauce or garnish to fish, it was likewise much consumed by our forefathers, and during Lent was never absent. Large quantities of fennel-seed (the fruit) are imported into this country; and, although it has lost some of its ancient reputation, it is still retained in the British Pharmacopœia as a carminative. It resembles aniseed in its properties, and is given to relieve flatulence in children, and as a vehicle for other medicines. Its ancient reputation was of a much more ambitious kind: it is recommended by Pliny to strengthen the eyesight, who says that when serpents cast their skins they eat this plant and swallow the juice to restore their sight. Gerarde, as usual, is full of cures to be performed by the use of this herb. He recommends it to nursing mothers, and attributes to the boiled roots virtues "equal to anise seed, and good for the liver and lungs." He says: "The ponder of the seed of Fennell drunke for certaine days together fasting preserveth the eye sight; whereof was written this Distichon following:—

" 'Fœniculum, Rosa, Verbena, Chelidonia, Ruta,
Ex his fit aqua quæ lumina reddit acuta.'

"Which being translated,—

" 'Of Fennell, Roses, Vervain, Rue, and Celandine,
Is made a water good to cleere the sight of eine.'"

In a curious old rhyming herbal, preserved at Stockholm, the following are a few of the virtues ascribed to the Fennel :—

"Fenel is herbe precyows—
Good is his seed, so is his rote ;
And to many things bote.
Ye sede is good, fastende to ete,
And eke in drage after mete.
Ageyn wyckid humores et bolyng,
Ageyn wyckid et many oyer thyng ;
Water of fenel to a plyth
Is wonder holsum for he syth
Me deled wt water of roset,
Half in aporcin nothyng bet.
Fenel in pottage & in mete
Is good to done, whane you schalt ete.
Whanne the adder is hurt in eye,
Ye rede fenel is hys prey ;
And zif he mowe it fynde,
Wonderly he doth hys kynde ;
He shale it chowe wonderly,
And leyn it to hys eye kindlely.
Ye jows schall sawg, & helyn ye eye,
Yat beforn was sick et feye."

Much more of this curious rhyming on the virtues of the Fennel we might quote, but we forbear. Pomet, in his "History of Druggs," assures us that confectioners "take clusters of the green fennel, which, when covered with sugar, they sell to make the breath sweet, for the green is reckoned to be of the greatest virtue ; while the seed," he adds, "is laid between olives, in order to give the oil a fine taste."

The Arabs of the present day use the leaves for giving a flavour to their food. In Italy and Spain they are added to various beverages, and considered wholesome and agreeable. The ancients believed that its constant presence in their food not only imparted bodily health and longevity, but gave strength and courage to those who partook of it ; an idea which has been embellished by Longfellow, who deduces from it a moral :—

"The goblet, wrought with curious art,
Is filled with waters that upstart
From the deep fountains of the heart,
By strong convulsions rent apart,
And running all to waste.

And as it mantling passes round,
With *fennel* is it wreathed and crowned ;

Whose seed and foliage sun embrowned,
Are in its waters steeped and drowned,
And give a bitter taste.

Above the lowly plants it towers,
The fennel with its yellow flowers;
And in an earlier age than ours
Was gifted with the wondrous powers
Lost vision to restore.

It gave men strength and fearless mood,
And gladiators, fierce and rude,
Mingled it with their daily food,
And he who battled and subdued,
A wreath of fennel wore.

Then in life's goblet freely press
The leaves that give it bitterness;
Nor prize the coloured water less,
For in thy darkness and distress
New light and strength they give.

And he who has not learned to know
How false its sparkling bubbles show,
How bitter are the drops of woe
With which its brim may overflow,
He has not learned to live.

Let our increasing, earnest prayer
Be too for light—for *strength* to bear
Our portion of the weight of care
That crushes into dumb despair
One half the human race.

Oh! suffering, sad humanity!
Oh! ye afflicted ones, who lie
Steeped to the lips in misery,
Longing, and yet afraid to die,
Patient, tho' sorely tried.

I pledge you in this cup of grief,
Where floats the fennel's bitter leaf;
The battle of our life is brief;
The alarm—the struggle—the relief—
Then sleep we side by side.

GENUS XX.—SESELI. *Linn.*

Calyx-limb 5-toothed. Petals obovate, notched, with an inflexed lobe. Cremocarp hairy or smooth, oval-ovoid or oblong-ovoid, not compressed; columella bipartite, free; mericarps with 5 thickened often corky obtuse ridges, the lateral ones marginal and frequently a little broader. Involucres various.

Plants of various habit.

The derivation of the name of this genus of plants is very doubtful and uncertain; it may be from the Arabian name of an umbelliferous plant somewhat resembling it, and called *Seycelyous*.

SPECIES I.—SESELI LIBANOTIS. *Koch.*

PLATE DCII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1915.
Billot, Fl. Gall. et Germ. Exsicc. No. 1676.
Athamanta Libanotis, *Sm.* Eng. Bot. No. 138.
Libanotis vulgaris, *D. C.* Prod. Vol. IV. p. 150.
Libanotis montana, *All.* Fl. Ped. Vol. II. p. 30.

Leaves bipinnate; leaflets cut into oblong mucronate segments; lowest leaflets close to the common petiole and with their basal lobes incumbent. Calyx-teeth subulate, elongate, deciduous. Involucre of numerous leaves. Cremocarp oval-ovoid, clothed with small stiff hairs.

On chalky hills in Sussex, Cambridgeshire, and Hertfordshire.

England. Biennial or Perennial? Late Summer and Autumn.

Root a tapering taproot. Stem clothed at the base with the fibrous remains of the decayed petioles, erect, 1 to 3 feet high, firm, furrowed, solid, slightly branched in the upper part. Leaves chiefly radical, shortly stalked, variable in the degree of cutting and in the size of the leaflets, sometimes like those of the common carrot, and sometimes approaching those of the cut forms of Pimpinella Saxifraga. Umbels with 20 to 40 furrowed pubescent rays, open when in flower, contracted in fruit, $\frac{1}{2}$ to 1 inch long; pedicels numerous, $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Involucre and involucel at length reflexed, of numerous subulate setaceous leaves with scarious ciliated borders. Flowers $\frac{1}{8}$ inch across, white, scarcely radiant. Calyx-teeth subulate, spreading. Cremocarp thickly clothed with short stiff white hairs. Styles spreading-reflexed, longer than the stylopods. Leaves dark-

green above, pale beneath, glabrous in all the British specimens I have seen, but frequently pubescent in the continental forms.

Mountain Meadow-Saxifrage.

French, *Séséli Libanotide.* German, *Heilwurz Sesel.*

GENUS XVI.—LIGUSTICUM. *Linn.*

Calyx-limb obsolete or 5-toothed. Petals obovate, notched, with an inflexed point. Cremocarp elliptical-ovoid, smooth, not compressed; columella free, bipartite; mericarps with 5 prominent nearly equal-keeled or slightly winged ridges, the lateral ones marginal; interstices each with several vittæ. Involucres various.

Plants of various habit, with white flowers.

The name of this genus of plants is taken from the place where the species grow abundantly—Liguria.

SPECIES I.—LIGUSTICUM SCOTICUM. *Linn.*

PLATE DCIII.

Haloscias Scoticum, *Fries*, Sum. Veg. Scand. pp. 23, 180. *Bab.* Man. Brit. Bot. ed. v. p. 149.

Lower leaves biternate, with rhomboidal or ovate crenate-serrate leaflets; upper stem-leaves ternate. Calyx-teeth triangular. Cremocarp elliptical-ovoid, with the ridges very prominent, keeled. Seed free in the interior of the mericarps.

On rocky and sandy sea-shores. Rather local, but occurs in most of the Scottish counties as far North as Orkney and Shetland; rare in England and apparently confined to the Northumberland coast; on the East coast of Ulster, Ireland.

England, Scotland, Ireland. Perennial. Late Summer.

Rootstock branched, thick, with a dark-brown wrinkled rind. Stem erect, 9 inches to 3 feet, furrowed and striate, hollow, slightly branched. Leaves mostly radical, on long petioles, sheathing at the base, ternate, with stalked leaflets; leaflets divided into 3, or tripartite, 1 to 3 inches long, the ultimate leaflets or segments varying from rhomboidal-ovate to oblong-rhomboidal, slightly lobed, and very bluntly serrated in the apical half; stem-leaves few, the upper ones on very short dilated petioles, ternate, with the leaflets 3-cleft, in other respects similar to the root-leaves. Umbels of 8 to 12 rays, 1 to 2 inches long, spreading in flower, contracted in fruit; pedicels $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Involucre of few and involucel of numerous

linear-subulate leaves. Flowers white or tinged with pink, $\frac{1}{6}$ inch across, scarcely radiant. Cremocarp $\frac{1}{3}$ inch long, brownish-olive, attenuated to each end, with very prominent almost winged ridges; interstices each with about 3, and the commissure with 6 vittæ. Styles short, recurved. Plant deep-green, glabrous, shining. Stem generally tinged with dull-purple.

Sea Lovage.

French, *Ligustique Levesche.* German, *Liebstöckel.*

The old name of this species is said by Dr. Prior to be spelt Loveache, as though it were love parsley; corruptions of the Latin *Levisticum*, its original name, as are also the French and German synonyms. It grows abundantly on the rocky shores of the Hebrides, and the Western coast of Scotland. The leaves are there used as a green vegetable, either boiled or eaten raw, under the name of Shemis. The taste is strong and not very pleasant: it is not unwholesome. An infusion is used in Scotland as a purgative for calves. The root possesses aromatic and carminative qualities, and has been used in medicine. The Lovage of the gardens (*Ligusticum levisticum*), used in making a liquor so called, is not a native of this country, but grows in Italy. Gerarde says: "The seed of Loveage warmeth the stomach, helpeth digestion; wherefore the people of Gennes in times past did use it in their meates, as we doe pepper." He adds: "The distilled water of Loveage cleareth the sight, and putteth away all spots, lentils, freckles, and rednesse of the face, if they be often washed therewith."

GENUS XXII.—SILAUS. *Besser.*

Calyx-limb obsolete. Petals oblong-obovate, sessile, truncate at the base, nearly entire or slightly notched, with an inflexed lobe. Cremocarp oblong-ovoid, not compressed; columella free, bipartite; mericarps with 5 prominent sharply-keeled equal ridges; interstices each with several vittæ. Involucres variable.

Plants with decompound leaves and yellowish or greenish-white flowers.

The name of this plant is one adopted by Pliny for an umbellifer resembling this genus: possibly the same.

SPECIES I.—SILAUS PRATENSIS. *Besser.*

PLATE DCIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1923.
Billot, Fl. Gall. et Germ. Exsicc. No. 781.
Peucedanum Silaus, *Linn.* *Sm.* Eng. Bot. No. 2142.
Cnidium Silaus, *Spreng.* *Sm.* Eng. Fl. Vol. II. p. 91.

Stem angular. Radical leaves 2, 3, or 4 times pinnate; the ultimate leaflets or segments strapshaped, acute, mucronate. Involucre of 1 or 2 leaves. Cremocarp shortly oblong-ovoid, glabrous. Styles reflexed, longer than the stylopods.

In meadows, pastures, and on commons. Frequent in the Eastern and Midland counties of England; rare in the Western counties and in Scotland, where it occurs about Oxenford Castle, near Kelso, also at Aberledy and near Dalkeith, Haddingtonshire.

England, Scotland, Ireland. Perennial. Autumn.

Root fasciculate. Rootstock without stolons, elongated, thickened, dark-brown, wrinkled. Stem erect, 1 to 3 feet high, tough, solid, slightly branched and nearly leafless above, clothed at the base with the fibrous remains of decayed leaf-stalks. Radical leaves rather shortly stalked, rhomboidal-triangular in outline, ternately 2, 3, or even 4 times pinnate, according to the depth of the divisions between the segments; terminal leaflets 3-cleft, lateral ones or segments entire; segments $\frac{1}{4}$ to $\frac{3}{4}$ inch long, variable in breadth; stem-leaves similar to the radical ones, but less divided, and with leaf-stalks dilated at the base. Umbel rays 4 to 12, rather unequal, 1 to 2 inches long, slightly curving inwards; pedicels $\frac{1}{8}$ to $\frac{1}{4}$ inch; involucels of numerous leaves, with scarious margins, shorter than the pedicels. Flowers $\frac{1}{10}$ inch across, very pale dirty-yellow; petals broad, truncate at the base and apex, with an incurved lobe. Stylopods large, with a waved margin. Cremocarp $\frac{1}{6}$ inch long, dark-brown, with 4 to 6 vittæ on the commissural face of the mericarps. Plant glabrous, dark-green.

Meadow Sulphurwort.

French, *Silaus des Prés.* German, *Wiesen Silau.*

The whole of this plant, when bruised, gives out an unpleasant odour, which is supposed, in some parts of Norfolk, to affect the milk and butter of cows feeding in pastures where it grows. It does not appear, however, that they eat it unless accidentally, as it is generally found uncropped in a field with other herbage.

GENUS XXIII.—MEUM. *Tournef.*

Calyx-limb obsolete. Petals elliptical or oval, tapering at the base, incurved at the point. Cremocarp oblong-ovoid, not compressed; columella free, bipartite; mericarps with 5 prominent sharply-keeled equal ridges; interstices each with several vittæ. Involucres none.

Herbs with decompound leaves and white or pink flowers.

This genus of plants is identical with the *μῆον* (*meon*) of Dioscorides; and the name is probably derived from *μειον* (*meion*), small, from the extreme delicacy and fineness of the leaves of the species.

SPECIES I.—MEUM ATHAMANTICUM. *Jacq.*

PLATE DCV.

Reih. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1932, Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 27.
Athamanta Meum, *Linn.* Sp. Plant. p. 53.
Ligusticum Meum, *D. C.* Fl. Fr. Vol. IV. p. 310.

Stem slightly branched. Leaves twice or thrice pinnate, with the leaflets cut into numerous short setaceous acute segments, not all in one plane. Involucre of few leaves; involucels sub-dimidiate.

On mountain pastures. Not uncommon in Wales, the North of England, and Scotland, but not extending to the extreme North of the latter country.

England, Scotland. Perennial. Summer.

Rootstock elongated, dark-brown, nearly smooth, the upper portion densely clothed with the fibrous remains of decayed leaf-stalks. Stem erect, 9 inches to 3 feet high, very slightly branched, and with few leaves. Radical leaves stalked, with the stalk about as long as the lamina, which is rhomboidal-triangular; leaflets 2 or 3 times cut or forked into hair-like divisions, spreading in all directions, $\frac{1}{8}$ to $\frac{1}{4}$ inch long; stem-leaves similar to the others, but less divided, and with much-dilated sheathing petioles. Umbels with 10 to 20 rays, $\frac{3}{4}$ to 2 inches long; pedicels $\frac{1}{8}$ to $\frac{3}{8}$ inch long. Flowers $\frac{1}{10}$ inch across, scarcely radiant, white often tinged with pink, many of the interior ones often male; petals roundish-oval, slightly notched at the summit. Cremocarp $\frac{1}{3}$ inch long, olive-chestnut colour, with the ridges yellowish-brown, prominent and keeled; mericarps with 4 or 6 vittæ on their commissural face. Plant bright dark-green, glabrous.

Bald-Money.

French, *Meum Athamante.* German, *Haarblättrige Bärwurz.*

The origin of the English name of this species of plants is variously given; it is known as Spignel-meu and Bald-money; bald, it is said, being the corruption of Balder, the Northern deity to whom it was dedicated. Dr. Prior, however tells us that "it is a corruption of the Latin *valde bona*, very good, as we learn from the Grete Herbal, where, speaking of Sistra, the author says: 'Sistra is dyll, some call it mew, but that is not so. Howbeit, they be verylike in proprieties and vertue, and be put eche for other; but Sistra is of more vertue than mew, and the leaves be lyke an herbe called valde bona, and beareth small sprigs as spiknarde. It groweth on hye hylles.'" In the Highlands, where it grows, the root is eaten, and is esteemed as a carminative and stomachic. The fruits have the same properties, and are aromatic and hot in taste. The whole plant possesses these qualities, and communicates them to milk and butter made from cows feeding on it. A strong infusion of the herb is said to give to cheese

the taste and smell of the Swiss schabzieger or chapsegar, which is so highly esteemed. In the genuine cheese it is produced by the pressed flowers or bruised seeds of the *Melilotus officinalis*.

GENUS XXIV.—CRITHMUM. *Linn.*

Calyx-limb obsolete. Petals oval, entire, involute, valvate. Cremocarp somewhat corky, oblong-ovoid, not compressed; columella free, bipartite; mericarps with 5 prominent sharply-keeled ridges, the lateral ones a little broader and marginal; interstices with several vittæ. Involucres and involucels many-leaved.

A glabrous perennial, having ternately decompound leaves, with thick linear fleshy segments, and compound umbels of small pale greenish-yellow flowers.

The origin of the name of this genus of plants is the Greek word κρινο (*krino*), I secrete, from its power of promoting various secretions; or, as some writers give it, from κριθη (*krithe*), barley, to which the fruit has some similarity.

SPECIES I.—CRITHMUM MARITIMUM. *Linn.*

PLATE DCVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1900.
Billot, Fl. Gall. et Germ. Exsicc. No. 1679.

The only species of the genus.

On cliffs by the sea-shore, more rarely on shingly or sandy beaches. Not uncommon on the South and Western coasts from Kent to Ayrshire.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock woody, elongated, branched. Stem ascending, 6 inches to 1 foot high, flexuous, fleshy, solid, smooth, green, finely striate. Petioles much dilated and sheathing at the base, so that they might best be described as having adnate membranous stipules. Leaves deltoid in outline, pinnate with 2 pairs of lateral leaflets, or ternate with leaflets again ternate or biternate; primary leaflets rarely simple; ultimate leaflets fleshy, nearly cylindrical, tapering at each extremity, or narrowly elliptical, mucronate, $\frac{3}{4}$ to 2 inches long. Umbel of 8 to 20 rather thick rays, slightly curving inwards, $\frac{3}{4}$ to $1\frac{1}{2}$ inch long; pedicels $\frac{1}{8}$ to $\frac{1}{4}$ inch long, curved inwards. Involucre and involucels of numerous ovate-triangular leaves, with sub-scarious margins, at length reflexed. Flowers $\frac{1}{12}$ inch across, pale yellowish-green; petals ovate, involute, caducous. Cremocarp $\frac{1}{4}$ inch long, oval-ovoid, corky, olive-colour or purplish, with narrow very acute ridges, formed by the gradual elevation of the

substance of the pericarp; mericarps separating readily from the columella when ripe. Stylopods large, conical, yellowish; styles very short and thick, sub-erect. Plant glabrous, green, very slightly glaucous.

Rock-Samphire.

French, *Crithme Maritime, Perce-pierre.* German, *Meerfenche Strandbazille.*

Dr. Prior tells us that the name of this plant is more properly, as it was formerly spelt, Sampere or Sampier, from the French *Saint Pierre*, and Italian *Herba di San Pietro*, contracted to Sampetra, from being, from its love of sea-cliffs, dedicated to the fisherman saint, whose name is πετρος (*petros*), a rock; French, *pierre.* Those who have once seen and smelt this plant will easily recognize it again. It grows where none but the adventurous can reach it—on the sides of cliffs near the sea, and exposed to the dashing spray of the waves. It is found in the clefts of rocks, and fringes the edges of precipices with its bright-green succulent leaves and tiny yellow blossoms. The Samphire is warm and aromatic in flavour, and is frequently used as a pickle. Visitors to the seaside, who wish to try this pleasant condiment, cannot do better than look for it on the sides of cliffs, where it often grows within the reach of those who are able to climb a few steps. Gather a basketful of its bright-green leaves, separate them from the stalks and flowers, and pour boiled vinegar and spice over them in the usual way, and there is a most pleasant and aromatic pickle. Samphire never grows submerged by the waves, yet always on the seashore; and this fact is mentioned by the late Professor Burnett as an illustration of the value of a little botanical knowledge even in trying and unexpected circumstances. During a violent storm in November, 1821, a vessel passing through the English Channel was driven ashore near Beachy Head, and the whole crew were washed overboard, four only being saved from immediate death by being thrown on the rocks on which the vessel struck. A lingering and terrible fate seemed to await them; for, although not under water, the waves appeared to be rapidly gaining on them. The darkness of the night and the violence of the storm prevented any help coming to them, and they sat awaiting the waves which roared around to engulf them at last, as they had their shipmates before. In this terrible moment of agony, one of the sufferers, grasping a weed to hold himself more firmly on the rock, at once recognized it as the Samphire, and, knowing that the Samphire is never submerged by the sea, he felt assured that he could say to the waves, "Hitherto shalt thou go, and no further." Trusting to the promise of this child of earth, the poor fellows remained stationary till the morning. They were not deceived; the sea having reached its bounds, gradually retired; light broke on the shipwrecked seamen, and they were rescued from their perilous position, having, no doubt, a grateful remembrance of the cheering and hope-giving words suggested by the root of Samphire in their dire necessity.

Samphire-gathering seems to have been a trade pursued at a remote period, and has almost a classical association, since Shakespeare immortalized it in King Lear. At the present time it grows but sparingly on the white cliffs of Dover; but it may have been more abundant at one period. Our poet supposes that Edgar is leading Gloucester along, and says,—

> "Come on, sir; here's the place; stand still. How fearful
> And dizzy 'tis to cast one's eyes so low!
> The crows and choughs, that wing the mid-way air,

Show scarce so gross as beetles. Half-way down
Hangs one that gathers samphire ; dreadful trade !
Methinks he seems no bigger than his head :
The fishermen that walk upon the beach
Appear like mice."

Samphire was in great reputation as a condiment in the time of Gerarde, who wrote about the year 1597 thus : "The leaves kept in pickle and eaten in sallads with oile and vinegar is a pleasant sauce for meat, wholsome for the stoppings of the liver, milt, and kidnies. It is the pleasantest sauce, most familiar, and best agreeing with man's body.' Culpepper describes it as "an herb of Jupiter," and much deplores that it had then gone out of fashion, for "it is well known almost to everybody that ill digestions and obstructions are the cause of most of the diseases which the frail nature of man is subject to ; both of which might be remedied by a more frequent use of this herb."

Tribe V.—ANGELICEÆ.

Cremocarp dorsally compressed ; columella distinct; mericarps flattened from back to front, with 5 primary ridges, of which the 3 dorsal ones are filiform or slightly winged, the marginal ones developed into a broad wing; the wings of the two mericarps not contiguous, so that the fruit has a double wing all round. Seed flat on the inner face. Flowers in regular compound umbels.

GENUS XXV.—ANGELICA. *Linn.*

Calyx-limb obsolete. Petals lanceolate, acuminate, entire, with the point erect or incurved. Cremocarp oval or oblong, much compressed from back to back of the mericarps, surrounded by a double wing; columella free, bipartite; mericarps flattened from back to face, with the 3 dorsal ridges filiform or thick, the marginal ones developed into a broad wing ; interstices each with a single vitta or with none. Involucres none or of few leaves.

Plants with ternate-pinnately decompound leaves, and compound umbels of white or pale-pink flowers. Easily distinguishable from the other British genera of Umbelliferæ by the fruit being surrounded by a double wing.

The name of this genus has reference to the supposed angelic properties of the species, and comes from *angelus*, an angel.

Sub-Genus I.—EU-ANGELICA. *D. C.*

Calyx-limb obsolete; mericarps flattened, with the dorsal and intermediate pair of ridges filiform, the lateral pair produced into

flexible wings; interstices with solitary vittæ; commissure with 2 vittæ. Seed adhering to the pericarp, without vittæ. Umbels regular, with very numerous rays.

SPECIES I.—ANGELICA SYLVESTRIS.

PLATE DCVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1936.

Stem erect, hollow, smooth below. Leaves ternately bipinnate; leaflets ovate or lanceolate, sometimes slightly lobed, finely serrate; petioles of the upper leaves dilated into very large sheaths. Umbel-rays pubescent. Involucre of 1 to 3 caducous leaves. Flowers white or very pale rosy-lilac. Calyx-limb obsolete. Wings of the mericarps at first sub-scarious, afterwards, when mature, firm, but not corky, those of the opposite mericarps separate.

In moist open woods and thickets, and in wet places, especially by the sides of streams. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem erect, 1 to 5 feet high, very thick and hollow, with a very large central bore, somewhat polished, finely striate, green or purple. Fully developed radical leaves very large, 1 to 2 feet long, deltoid in outline, with rather few leaflets, $\frac{3}{4}$ to 3 inches long; sheaths of the upper leaves much dilated, pale, enveloping the young umbels like a spathe. Umbels of 10 to 40 rays, 1 to 2 inches long; pedicels $\frac{1}{8}$ to $\frac{1}{4}$ inch. Leaves of the involucre and involucel subulate, those of the former deciduous, those of the latter recurved and persistent. Flowers $\frac{1}{6}$ inch across, scarcely radiant, with very long stamens. Petals oblong-lanceolate, slightly incurved at the tip. Cremocarp $\frac{1}{5}$ inch long, not much longer than broad, cordate at the base; dorsal and intermediate ridges contiguous, in an elliptical space on the back of the mericarps; lateral ridges produced into wings, each of which is nearly as broad as the cavity of the fruit itself: these wings, when half-grown, are scarious, and have a somewhat satin-like appearance, but become opaque and stiff when fully ripe. Styles reflexed, longer than the stylopods. Plant green, somewhat shining; leaflets paler beneath, and sometimes with a few hairs on the ribs above, otherwise glabrous. Stem glabrous below; the upper part and the rays of the umbel pubescent.

Wild Angelica.

French, *Angélique Sauvage.* German, *Wald Brustwurz.*

This plant possesses qualities similar to those of the Archangelica, but its taste is more bitter and its flavour less grateful. It yields a good yellow dye.

Sub-Genus II.—ARCHANGELICA. *Hoffm.*

Calyx-limb of 5 small teeth. Mericarps plano-convex, with the dorsal and intermediate pair of ridges thick, keeled, the lateral pair produced into thin somewhat corky wings; interstices without vittæ. Seed free from the pericarp, with numerous vittæ.

SPECIES II.—ANGELICA ARCHANGELICA. *Linn.*

PLATE DCVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XXI. Tab. 1940.

Archangelica officinalis, *Hoffm.* *Bab.* Man. Brit. Bot. ed. v. p. 150. *Fries*, Sum. Veg. Scand. p. 23. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 332.

Stem erect, hollow, smooth below. Leaves ternately bipinnate; leaflets ovate, sometimes slightly lobed, serrate; petioles of the upper leaves dilated into very large sheaths. Involucre of 1 to 3 caducous leaves. Flowers greenish-white. Calyx-limb of 5 small teeth. Wings of the mericarps never scarious, somewhat corky when mature, those of the opposite mericarps almost contiguous.

In wet places, by the sides of streams. Very rare, and not native. It is said to have occurred near Bury St. Edmunds, Suffolk; at Broadmore, seven miles north-west of Birmingham; on the banks of the Skern, Durham; and formerly about Battersea Fields, and by the side of the Thames between Woolwich and Plumstead. I found a few specimens about ten or twelve years ago between Greenwich and Woolwich, close to high-water mark. I also once saw it on Fisherow Links, near Edinburgh; but as the rubbish from adjoining gardens was cast there, no doubt the plant came with it, and as I failed to find it in succeeding years, it cannot be considered even a naturalized Scotch plant.

[England.] Perennial or Biennial? Summer and Autumn.

This plant, when in flower, is so extremely like A. sylvestris that it can only be distinguished by the presence of the calyx-teeth, the green tinge of the flowers, and the more numerous rays of the umbel: when in fruit, however, the cremocarp is very different, being convex on each side and not flattened, shorter ($\frac{1}{4}$ inch long), and broader in proportion, with the ridges much thicker and more prominent, the lateral ones corky, and not membranous in any stage; besides this, the lateral wings of the 2 mericarps are almost contiguous, so that the fruit can scarcely be said to be surrounded by a double wing, as in the true Angelicæ, so that this plant makes

an approach in the form of the fruit to the Peucedaneæ, between which and the Angelicæ there is no natural distinction.

Garden Angelica.

French, *Angélique Officinale.* German, *Gebräuchliche Engelwurz.*

This plant was formerly cultivated largely in gardens on account of its leaf-stalks, which possess an aromatic pungent taste. They were blanched and eaten as celery; now they are only used when candied, being, when so prepared, considered to be a pleasant addition to the dessert. They may be seen at Messrs. Fortnum and Mason's, pressed flat and covered with crystallized sugar, tied together in neat tasty bundles with coloured ribbon. In Lapland the stalks are peeled and eaten raw as a great relish. A medicinal water was formerly distilled from the plant, and its reputation in medicine was supposed to be very great; and the account of its virtues given by Gerarde will certainly amuse, if it do not instruct, those who will take the trouble to read it. He says:—

"The root of garden Angelica is a singular remedy against poyson and against the plague, and all infections taken by evil and corrupt aire, if you doe but take a piece of the root and hold it in your mouth, or chew the same betweene your teeth—it doth most certainly drive away the pestilential aire; yea, although the corrupt aire hath possessed the hart, yet it driveth it out againe, as rue and treacle, and such like antipharmaca do.

"Angelica is an enemy to poysons; it cureth pestilent diseases if it be used in season; a dramm weight of the pouder hereof is given with thin wine; or if the fever be vehement with distilled water of Carduus benedictus; or of tormentile and with a little vinegre, and by itself also, or with treacle of vipers added."

"It is reported that the root is available against witchcraft and inchantments, if a man carry the same about them, as Fuchsius saith."

He adds to its many virtues, that "it cureth the biting of mad doggs and all other venomous beasts."

Tribe VI.—PEUCEDANEÆ.

Cremocarp dorsally compressed; columella distinct; mericarps flattened from back to front, with 5 primary ridges, of which the 3 dorsal ones are filiform or indistinct, the marginal pair developed into a conspicuous wing; wings of the two mericarps contiguous, so that the fruit is surrounded by a single wing. Seed flat on the inner face. Flowers in regular compound umbels.

GENUS XXVI.—PEUCEDANUM. *Linn.*

Calyx-limb of 5 teeth, sometimes obsolete. Petals obovate, notched or entire, with an inflexed lobe. Cremocarp oval or oblong, compressed from back to back of the mericarps, surrounded by a conspicuous flat wing; columella free, bipartite; mericarps with the 3 dorsal ridges filiform, the marginal ones developed into

a broad wing; interstices each with 1 to 3 vittæ. Involucre variable.

Plants with decompound leaves, and yellow, white, or greenish flowers.

This genus of plants is said to be the *πευκεδανον* (*peukedanon*) of Theophrastus and Dioscorides, and the name is derived from *πευκη* (*peuke*), the pine-tree, on account of the resinous smell of its leaves.

Section I.—EU-PEUCEDANUM. *D. C.*

Calyx-limb 5-toothed. Wings of the mericarps narrow; interstices with a single vitta; commissural vittæ superficial. Involucre absent or few-leaved.

SPECIES I.—PEUCEDANUM OFFICINALE

Plate DCIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 3391.

Leaves 3- to 5-times ternate; leaflets linear, attenuated at both ends, 3-nerved, entire. Involucre of about 3 linear-acuminate deciduous leaves. Flowers buff-yellow. Pedicels much longer than the fruit. Cremocarp elliptical-oval, much compressed; mericarps each with 5 slender ridges on the back, the 3 central ones contiguous and the 2 lateral remote.

In salt marshes. Very rare. About Faversham and Whitstable, Kent, and near Walton, Essex.

England. Perennial. Autumn.

Stem erect, 18 inches to 4 feet high, round, solid, finely striate, branched at the apex; branches frequently opposite. Radical leaves very large, on long stalks, 3 times ternate in the specimens which have come under my notice, but, according to Koch and other writers, 5 times ternate; leaflets parallel-nerved, somewhat grass-like, 1 to 4 inches long, spreading, flaccid. Umbels of 10 to 20 slender straight rays, $1\frac{1}{2}$ to 4 inches long; pedicels $\frac{1}{2}$ to 1 inch long. Involucels of setaceous leaves much shorter than the pedicels. Flowers $\frac{1}{12}$ inch across, not radiant, pale-yellow, the central ones mostly barren. Calyx-teeth very minute, triangular. Petals roundish-oval, emarginate, with inflexed points. Stamens very long. Styles thick, sharply recurved, about as long as the stylopod. Cremocarp olive-brown, $\frac{1}{4}$ inch long, about twice as long as broad, the wing about one-quarter of the breadth of the solid part, truncate at the base; ridges slightly elevated, the marginal ones, from which the

wings spring, rather distant from the other 3; commissural face with 2 superficial slightly-curved vittæ. Plant dark-green, glabrous.

Sea Hog's-Fennel, Sulphur-wort.

French, *Peucédane Officinal.* German, *Gebräuchlicher Haarstrang.*

This plant was formerly in the list of herb remedies, and many stimulating qualities have been attributed to its root. It is, however, of doubtful value for internal use. Gerarde calls it Horsestrange and Horestrong, and says it is known as Sulphur-wort and Brimstone-wort. The root, when wounded in the spring, yields a considerable quantity of a yellow juice which dries into a gummy resin, and retains the strong scent of the root. Gerarde gives a list of twelve different methods of using this plant in various disorders, against each of which he describes it to be a "present remedie."

Section II.—THYSSELINUM. *Hoffm.*

Calyx-limb 5-toothed. Wings of the mericarps narrow; interstices with solitary vittæ; commissural vittæ deep-seated, not visible through the pericarp. Involucre many-leaved, reflexed.

SPECIES II.—PEUCEDANUM PALUSTRE. *Mönch.*

PLATE DCX.

Billot, Fl. Gall. et Germ. Exsicc. No. 784.
Thysselinum palustre, *Hoffm. Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 336.
Selinum palustre, *Linn. Sm.* Eng. Bot. No. 229.

Leaves thrice pinnate; leaflets pinnatifid; segments strap-shaped, acuminate. Involucre of numerous persistent deflexed leaves. Flowers white. Pedicels longer than the fruit. Cremocarp elliptical-oval, compressed; mericarps each with 5 thick blunt contiguous equidistant ridges.

In fens and marshes. Local. On Burtel Moor, Bridgewater, Somerset; Epping Forest, Essex; and several localities in the fenny districts of Norfolk, Suffolk, Cambridge, Huntingdon, and Lincoln: also on Thorne Moor, near Doncaster, Yorkshire.

England. Perennial. Late Summer and Autumn.

Rootstock thickened, stem erect, 3 to 5 feet high, furrowed, hollow below, slightly branched above. Radical leaves very large, somewhat resembling those of Hemlock, divided into fine segments; ultimate segments $\frac{1}{4}$ to 1 inch long. Rays of the umbel 12 to 30, rather stout, $1\frac{1}{2}$ to 2 inches long; pedicels $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Flowers $\frac{1}{12}$ inch across, not radiant, white, the central ones barren. Calyx-teeth very minute, deltoid. Petals obovate, slightly notched, with an inflexed point. Cremocarp $\frac{1}{4}$ inch long, greenish-olive and chestnut-colour, with the ridges very thick, filling up the inter-

stices; wing about one-fifth of the solid portion, cordate at the base; commissure with the vittæ concealed. Plant light-green, glabrous, with scabrous lines along the upper side of the divisions of the petiole and the midribs of the leaflets.

Marsh Hog's-Fennel.

This plant is known as the Milk Parsley, and possesses the same stimulating qualities as the former species. In Russia the roots are used as a substitute for ginger. Both plants owe their properties to a substance chemically known as Peucedanium, which is a very acrid crystalline principle, contained in the fœtid yellow juice extracted chiefly from the root of the plant.

Section III.—IMPERATORIA. *Linn.*

Calyx-teeth obsolete. Wings of the mericarps rather narrow; interstices with solitary vittæ; commissural vittæ superficial. Involucre none.

SPECIES III.—PEUCEDANUM OSTRUTHIUM. *Koch.*

Plate DCXI.

Imperatoria Ostruthium, *Linn.* *Sm.* Eng. Bot. No. 1380. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 336. *D. C.* Prod. Vol. IV. p. 183.

Leaves biternate or ternate, with the leaflets 3-cleft or -lobed; lobes ovate, inciso-serrate. Involucre absent. Flowers white. Pedicels longer than the fruit. Cremocarp roundish-oval, much compressed; mericarps each with 5 slender ridges, the 3 central ones contiguous, prominent, the 2 lateral ones remote and less elevated.

In moist meadows and by road-sides. Rare, though occurring in most of the counties of the North of England and in Scotland, but very doubtfully native.

England, Scotland. Perennial. Summer.

Stem erect, 18 inches to 3 feet high, stout, round, striate, hollow, slightly branched, the branches often opposite. Radical leaves on long stalks, somewhat resembling those of Ægopodium, but with the leaflets less separated and broader towards the apex, and more cut, 1½ to 3 inches long; stem-leaves similar, less divided, on short spathe-like petioles. Rays of the umbel 20 to 40, slender, 2 to 3 inches long, pedicels ¼ to ½ inch. Flowers $\frac{1}{12}$ inch across, white, not radiant. Calyx-segments obsolete. Petals oval, incurved. Cremocarp $\frac{1}{6}$ inch long, olive, with a pale border, the 3 dorsal ridges

contiguous and prominent; wing about half the breadth of the solid portion. Plant pale yellowish-green, glabrous.

Master-wort, Herb Gerard.

French, *Impératoire Commune.* German, *Meisterwurz.*

The common name of this species is a translation of its old Latin name, *Imperatoria*, and was probably given to it after some emperor unknown, but understood by the herbalists as indicating the masterly virtues of the plant. The root is warm and aromatic, and has been recommended in many disorders. When chewed, it excites a copious flow of saliva, occasioning a warm and not disagreeable sensation in the gums, and on this account has been recommended for toothache. As we might expect, its very evident qualities found for it a great reputation in the ancient practice of pharmacy, and we read of most wonderful cures being wrought by its agency in the pages of old writers. Gerarde tells us that the roots and leaves stamped, "dissolve and cure pestilential carbuncles and botches. It helpeth greatly such as have taken great squats, bruses, or falls from some high place, cureth the bitings of mad dogs, and of all other venomous beasts."

"Herbe Gerard, with his roots stamped and laid upon members that are troubled or vexed with the gout, swageth the paine, and taketh away the swelling and inflammations thereof." We might muliply the list of virtues ascribed to this plant; but as we now believe them to have been in great measure imaginary, we forbear.

GENUS XXVII.—PASTINACA. *Linn.*

Calyx-limb obsolete or of 5 small teeth. Petals suborbicular, entire, with a truncate involute lobe. Cremocarp oval or orbicular, flattened from back to back of the mericarps, surrounded by a rather narrow flat border; columella free, bipartite; mericarps flattened from back to front, with the 3 dorsal ridges filiform, the lateral pair developed into a narrow wing; interstices each with a single vitta tapering at each extremity and reaching nearly, but not quite, to the base of the mericarp. Involucre none or of few leaves.

Herbs with pinnate leaves, with subsessile or shortly-stalked lobed or dentate leaflets, and large compound umbels of rather small bright-yellow flowers.

The name of this genus of plants is derived from the Latin word *pastus*, food, or from *pasco*, I eat. Some authors give as the derivation the word *pastinum*, a dibble, in reference to the form of the root.

SPECIES I.—PASTINACA SATIVA. *Linn.*

PLATE DCXII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1882 and 2842.

Stem sulcate. Leaves pinnate; leaflets oblong or ovate, often slightly lobed or cut, serrate. Involucre and involucels none.

Calyx-teeth obsolete. Cremocarp obovate, oval, or roundish; commissure with 2 vittæ.

By road-sides, in waste places, pastures, &c. Very common in chalky districts, more rare elsewhere; but pretty generally distributed throughout England as far North as Durham and Lancashire. In Scotland it has been found in Ayrshire and Arran, but no doubt escaped from cultivation.

England, [Scotland,] Ireland. Biennial or Annual. Summer and Autumn.

Root tapering, slender in the wild plant. Stem erect, 1 to 4 feet high, solid, furrowed and angular, rough and pubescent, slightly branched, the upper branches generally opposite. Leaves with 2 to 5 pairs of leaflets and a terminal one which is generally 3-lobed; leaflets 1 to 3 inches long, variable in breadth and in the degree of lobing or incision, crenate-serrate with the serratures pointed, pubescent beneath or on both sides, rarely glabrous on both sides. Umbels of 6 to 20 straight rather thick rays, $\frac{3}{4}$ to 2 inches long; pedicels $\frac{1}{5}$ to $\frac{1}{4}$ inch. Flowers $\frac{1}{10}$ inch across, bright-yellow. Cremocarp variable in breadth and shape, from $\frac{1}{5}$ to $\frac{1}{4}$ inch long, brown when ripe, doubly convex; mericarps each with 5 ridges, the 3 dorsal ones contiguous, the lateral ones remote; wing very narrow, forming a border to the cremocarp. The fruit of the central umbel is usually larger and broader than that of the lateral ones. Plant rather dull-green, very variable. M. Jordan divides it into several species, the distinctions between which are unsatisfactory.

Wild Parsnip.

French, *Panais Cultivé.* German, *Gemeine Pastinake.*

The name of this plant is spelt in the old herbals Parsnep, which shows its derivation from the Latin *pastus*, and *napus*, a turnip. It is a valuable agricultural plant, and has long been much esteemed as food for man and cattle.

It was known to the Romans and most of the ancient European nations. The Emperor Tiberius was so fond of the roots that he had them brought from Germany, where they grew to a larger size than they attained to the south of the Alps. In the middle ages they were much used as an accompaniment to salt fish eaten during Lent, and this practice is now often followed. In the North of Scotland, Neil observes, "Parsnips are often beat up with potatoes and a little butter; of this excellent mess the children of the peasantry are very fond, and they do not fail to thrive upon it." In the North of Ireland a pleasant table beverage is prepared from the roots; brewed with hops, Parsnip wine is also made in some places; and they afford an excellent ardent spirit when distilled. The differences between the wild Parsnip and the cultivated root have led many to doubt whether they be the same species; but this doubt is now set at rest by the experiments of Professor Buckman, who succeeded perfectly in producing fine specimens of the cultivated Parsnip from roots taken up

when growing wild in their native haunts and transplanted to the garden. The Parsnip is one of the hardiest of our esculent vegetable productions, as is proved by the fact of its having withstood the intense frost of 1838 in the open ground. There are four varieties; viz., the common, Guernsey, hollow-crowned, and round or turnip-rooted. The hollow-crowned has been found the best. The seed should be sown in March, as early in that month as the soil and the weather will permit, in shallow drills 18 inches apart, and the young plants thinned out afterwards. They are taken up late in the autumn, when the roots have attained their full size. The roots are not in perfection for culinary purposes until their first season's growth is completed, which is indicated by the decay of the greater part of the leaves. Some may then be taken up, their tops cut off, but not too closely, and the roots stored in sand in a cool place, so as to guard against the stimuli of light and heat as much as possible. In Jersey the Parsnip forms one of the most important crops, and the preparation of the land, which requires unusually deep ploughing, is one of the most laborious tasks of the small farmer in the early spring. In that mild climate the roots are generally ready to take up in September. It is reckoned that 30 perches of Parsnips will fatten an ox of three or four years old, with a small quantity of hay, supplying him with food for three months. One farmer in Jersey is recorded to have raised upwards of fourteen thousand pounds of Parsnips upon a quarter of an acre of land; and even larger crops are said to have been obtained, which is the more remarkable, as little manure but sea-weed is used. These large Parsnips are inferior to the smaller varieties, and it is said that those grown on poor land are sweeter and pleasanter to the taste than those out of a richer soil. The great quantity of starch and sugar yielded by the Parsnip would naturally suggest their fattening nature as a food. In an analysis of the constituents of 1 lb. of Parsnips given by Dr. Lankester, in his Guide to the Food Collection at the South Kensington Museum, we find that it contained 13 oz. 53 grs. of water, 87 grs. of albumen and casein, 210 grs. of sugar, 245 grs. of starch, 35 grs. of fat, 52 grs. of gum, 1 oz. 123 grs. of woody fibre, 70 grs. of ashes. From this it will be seen that Parsnips as an article of diet are much inferior to potatoes, as a substitute for which they have been recommended.

Gerarde tells us that that "there is a pleasant food or bread made of the roots of Parsnips," which, however, he only relates on the authority of his friend Mr. Plat, "having made no tryal of it nor meane to do."

GENUS XXVIII.—HERACLEUM. *Linn.*

Calyx-limb of 5 small teeth. Petals obovate, notched, with an inflexed lobe; the exterior ones generally radiant and bifid. Cremocarp oval or orbicular, compressed from back to back of the mericarps, surrounded by a flat border; columella free, bipartite; mericarps flattened from back to face, with the 3 dorsal ridges very faint, the lateral ones developed into a rather broad flat border; interstices each with a single vitta, which is thickened at the lower end, and does not reach more than about halfway down the mericarp. Involucre generally of few leaves.

Large herbs with sub-ternately pinnate leaves with the leaflets generally cut, the lowest pair on rather long stalks; and large

umbels of white flowers with the exterior petals radiant, or of greenish flowers, not radiant.

This genus of plants was named in honour of Hercules, who is said to have discovered it.

SPECIES I.—HERACLEUM SPHONDYLIUM. *Linn.*

PLATE DCXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2677.

Stem retrorsely hispid. Leaves pinnate, with 2 pairs of lobed or angulated pinnæ, and a terminal one which is generally 3-cleft. Flowers radiant, the petals of the external ones wedgeshaped, cleft into 2 often unequal strapshaped lobes. Cremocarp roundish-obovate or oblong-obovate; commissure with 2 vittæ, reaching scarcely halfway down.

In hedges, open places, in woods, moist meadows &c. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem stout, erect, 18 inches to 6 feet high, hollow, angular, furrowed, branched towards the apex. Leaf-segments very variable in form and degree of incision, $1\frac{1}{2}$ to 6 inches long. Umbels of 10 to 30 stout nearly straight rays, $1\frac{1}{2}$ to 4 inches long; pedicels $\frac{3}{4}$ to $\frac{1}{2}$ inch long. Involucre of few herbaceous caducous linear-lanceolate ciliated leaves, sometimes absent; involucels of numerous leaves. Flowers large, the external radiant ones sometimes $\frac{1}{2}$ inch across, white; central flowers of the umbellules barren. Cremocarp pale olive-brown, $\frac{1}{4}$ to $\frac{3}{8}$ inch long, very variable in shape, generally increasing in breadth towards the apex, which is emarginate or obcordate; mericarps with 5 filiform ridges, the 3 dorsal ones approximate, the lateral ones distant; wing narrow, forming a border to the cremocarp; vittæ superficial, very conspicuous, those on the commissure and the lateral ones on the back of the mericarps thickened towards the apex, the inner dorsal ones sometimes thickened, sometimes nearly linear. Plant dull-green, the leaves paler below, rather thinly clothed with short stiff hairs.

A very variable plant, out of which several species have been made by continental botanists; but I am satisfied that neither the shape of the leaflets nor the fruit affords distinguishing characters, and that in Britain we have but a single indivisible species.

Common Cow-Parsnip.

French, *Berce Brunecursine.* German, *Gemeine Bärenklau.*

This is one of our common wayside plants, which might really be usefully employed, if our peasantry were better informed as to the nature and properties of the

wild vegetation surrounding them. It is generally looked upon merely as a noxious weed, though in some districts where it grows, the leaves are collected and given to pigs, who quickly fatten upon them; hence the plant is called *Hogweed*. The stalks when stripped of their rind, which is somewhat acrid, are edible, and are used as food in some parts of Asiatic Russia. In Siberia and Russia the stalks are dried in the sun, when a sweet substance exudes from them, which resembles sugar, and is eaten as a great delicacy. A spirit is distilled from the stalks thus prepared, by first fermenting them with water and either mingling bilberries with them or not. Gmelin says this spirit is more agreeable to the taste than spirit distilled from corn. The young shoots and leaves may be boiled and eaten as a green vegetable, and when just sprouting from the ground resemble asparagus in flavour. This experiment is, however, seldom tried, owing to the ignorance of those to whom such an addition to the table would be a benefit and luxury.

GENUS XXIX.—TORDYLIUM. *Linn.*

Calyx-limb of 5 teeth. Petals obovate, notched, with an inflexed lobe, the exterior ones radiant and bifid. Cremocarp oval or orbicular, compressed from back to back of the mericarps, finely tuberculated, often pubescent, surrounded by a wing thickened towards the outside; columella free, bipartite; mericarps with the dorsal ridges obsolete, the lateral ones developed into a narrow thickened wing, so that the mericarp seems set in a frame; interstices with 1 or more filiform vittæ. Involucre many-leaved.

Herbs with pinnate leaves, with subsessile or shortly stalked ovate or lanceolate cut leaflets; and white radiant monœcious flowers, in rather small umbels: the exterior flowers of the umbellules fertile, the inner ones barren.

The name of this genus appears to be a corruption of *Tortilium*, from *torqueo*, I twist; from the form of its branches, or that of its fruits, which seem as if turned or wrought by art.

SPECIES I.—TORDYLIUM MAXIMUM. *Linn.*

PLATE DCXIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 29.

Leaves pinnate, with 2 to 3 pairs of leaflets; leaflets sessile, oblong or lanceolate, inciso-serrate; terminal leaflet in the upper leaves sub-rhomboidal or strapshaped, much longer than the others. Involucre and involucel many-leaved. Flowers slightly radiant, the outermost petal larger than the others, cut into 2 equal lobes. Pedicels very short. Cremocarp roundish oval, hairy, surrounded by a thickened continuous even margin.

In waste places. Very rare. Under the hedge on the north side

of the parks, Oxford ; in a hedge about half a mile from Eton, and near Isleworth.

England. Annual. Autumn.

Stem erect, 1 to 4 feet high, furrowed, retrorsely hispid, slightly branched towards the top. Umbels of 5 to 10 hispid unequal rays, ½ to 1 inch long. Pedicels much surpassed by the leaves of the involucels. Flowers ⅛ inch across, white. Cremocarp ¼ inch long, covered with small tubercles, from which short stiff hairs are produced; border continuous, not beaded. Plant dark-green, hispid.

Great Hart-wort.

French, *Tordyle élevé.* German, *Grösster Zirmet.*

Tribe VII.—DAUCINEÆ.

Cremocarp dorsally compressed; columella distinct; mericarps flattened from back to front, with 5 primary ridges, 3 on the back, filiform and hairy, the lateral pair on the face of the mericarp, and 4 secondary elevated prickly ridges. Seed flat on the inner face. Flowers in regular umbels.

GENUS XXX.—DAUCUS. *Linn.*

Calyx-limb of 5 teeth. Petals obovate, notched, with an inflexed lobe. Cremocarp oblong or oval, slightly compressed from back to back of the mericarps; columella free, undivided, 2-cleft or bipartite; mericarps compressed from back to front, with 5 primary filiform bristly ridges, of which 3 are on the back and 2 on the face of the seed, and 4 prominent winged secondary ridges, with the wing divided into a single row of soft spines; vittæ solitary, under the secondary ridges. Involucre generally of numerous pinnatifid leaves.

Herbs with pinnately decompound leaves, and white, pink, or yellowish flowers.

The name of this genus of plants is supposed to be derived from δαιω (*daio*), I warm.

Species I.—DAUCUS CAROTA. *Linn.*

Plates DCXV. DCXVI.

Stem hispid. Leaves bi- or tri-pinnate; leaflets pinnatifid. Involucre of numerous pinnatifid or 3-cleft leaves, about as long as the umbel-rays in flower, exceeding them in bud; involucels scarious, with an herbaceous midrib. Cremocarp oblong-ovoid,

compressed; spines about as long as the diameter of the cremocarp; columella undivided.

Var. α, *genuina.*

PLATE DCXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2840.

D. Carota, *Sm.* Eng. Bot. No. 1174. *Bab.* Man. Brit. Bot. ed. v. p. 151. *Hook. & Arn.* Brit. Fl. ed. viii. p. 157. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 343. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 665.

Stem erect, branched in the upper part; branches making an acute angle with the stem. Leaflets with strapshaped or linear acute rather distant segments. Umbel generally concave in fruit; spines of the fruit distinct nearly to the base, generally hooked at the top.

Var. β, *gummifer.*

D. gummifer, *Lam.* *Bab.* Man. Brit. Bot. ed. v. p. 151. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 658.

D. maritimus, *With.* *Sm.* Eng. Bot. No. 256. *Hook. & Arn.* Brit. Fl. ed. viii. p. 187 (non *Lam.*)

Stem branching from the base; branches widely spreading. Leaflets with the segments strapshaped or oblong, usually contiguous. Umbels generally remaining convex or flat in fruit; spines of the fruit dilated and combined towards the base, without hooks at the apex.

Sea Carrot.

French, *Carotte de Boccone.*

Var. α very common on dry banks, borders of fields, and pastures; generally distributed, except in the extreme North of Scotland. Var. β on the seashore in the South of England.

England, Scotland, Ireland. Biennial. Summer and Autumn.

Var. α with the root tapering, scarcely fleshy in the wild plant. Stem erect, 3 inches to 3 feet high, rather slender, sparingly hairy, solid, furrowed. Leaves oblong-triangular in outline, finely divided, with acute segments. Umbels stalked, with very numerous hispid rays, ½ to 2 inches long. Leaves of the involucre with a membranous border at the base, and 3 or 5 narrowly linear-acute herbaceous segments; involucel-leaves linear-lanceolate, acute, hispid on the herbaceous central stripe, and ciliated towards the apex. Flowers white, slightly radiant, ⅛ inch across, the central flower of the umbel generally dark reddish-purple. Umbel-rays converging

at maturity, and the exterior ones being longer, the fruit-umbel generally presents the appearance of a bird's nest. Cremocarp $\frac{1}{8}$ inch long, dark-brown when ripe, the secondary ridges furnished with subulate spreading spines, with 1 or 2 small hooks at the apex. Plant light-green, more or less hispid.

Var. β in its extreme form looks very distinct from the ordinary inland wild Carrot, having the leaves much more fleshy, broader, usually less deeply divided. The stems are much shorter in proportion to their stoutness, the branches more spreading; the stem is also more hispid, with the hairs pointing backwards; the divisions of the involucre are broader and more reflexed after flowering, the leaves of the involucels much broader and less scarious; the umbel is rarely concave in fruit; the petals are frequently green or pink and ciliated; the cremocarp has the spines less spreading, broader and united at the base. These differences, however, though they apply to the Cornish and Devon plants, do not to those of the Kentish coast, which are quite intermediate between the Cornish and the inland forms, passing insensibly into the latter, and yet approaching too closely to var. α to be separated from it. Mr. H. C. Watson sowed the seed of the Channel Island maritime form, which resembles that from Cornwall, and the plant which resulted was even in the first generation undistinguishable from the common wild Carrot.

Wild Carrot.

French, *Carotte Commune.* German, *Gemeine Möhre.*

The specific name of this well-known vegetable seems to have reference to the colour of its root, and to have its origin in the Celtic word *car*, which means *red*. From the wild and apparently worthless inhabitant of our sea-side is produced by cultivation the excellent vegetable so well known in our gardens and upon our tables. The Parsnip and the Carrot are perhaps as striking examples as can be found of the effects of cultivation on wild plants. The root of the wild variety is small and woody in texture, while that of the cultivated kind is fleshy and succulent, and grows to an immense size. It is probable that some accidental variety, with a larger and softer root than ordinary, was transplanted to the garden, and its descendants by long cultivation in rich soil, eventually attained their present excellence. The Carrot is minutely described by Dioscorides, and noticed by him as being cultivated in gardens for its esculent root. From his time to the present, it seems to have been in constant use by various nations. In England it was first generally cultivated in the reign of Queen Elizabeth, and was introduced by the Flemings, who finding the soil about Sandwich, in Kent, peculiarly favourable for it, grew it there largely, and as vegetables were at that time rather scarce in England, the Carrot was warmly welcomed and became a general favourite.

Carrots contain a large amount of water, and their most distinguishing dietetical substance is sugar, of which they possess nearly 6½ per cent. Starch in small quantities is also found, with a small portion of albumen. They are a valuable product for the farmer in feeding his cattle, and for this purpose are raised in large quantities, although the small proportion of nitrogenous principle in the chemical composition of

Carrots detracts from their value as food either for man or beast. The Carrot requires a light soil for its successful cultivation, a somewhat sandy loam or dry peaty land being the best adapted to it. In Arthur Young's time the cultivation of this root was almost entirely confined to the light lands of Norfolk and Suffolk, but it has now extended to many other parts of the kingdom.

The seed should be sown in March, on earth well prepared and ploughed deeply during the winter. The seed is sown either broadcast or in drills, and the quantity required is about 2 lb. for an acre for drills and 5 or 6 lb. if broadcast. During the growth of the crop the great point appears to be to keep them well weeded, and it is recommended to use the hoe frequently between the rows. Carrots are generally taken up about the last week in October. The operation is performed by three-pronged forks. They are then stored for winter use in a dry place. The produce of an acre of Carrots in Suffolk, according to Arthur Young, is at an average 350 bushels, but it sometimes greatly exceeds this. Horses are remarkably fond of Carrots, and when mixed with oats form very good food for them. With a small quantity of oats or other corn, a horse may be supported on from 20 to 30 lb. of Carrots daily. In the Channel Islands and in Brittany, much larger crops of Carrots and Parsnips are obtained than are yielded in England, the soil being deeply trenched by a spade or plough constructed for the purpose.

The boiled roots of Carrots are sometimes used as a cataplasm for application to ulcers and cancerous sores.

In some parts of continental Europe, a spirit is distilled from the roots of the Carrot, the abundance of sugar they contain being easily convertible into alcohol: about 160 lb. of the crushed roots are required to yield one gallon of spirit. Sugar has also been obtained from the Carrot; but its manufacture is abandoned as unprofitable. In Germany a substitute for coffee has been made of Carrots chopped into small pieces and partially carbonized by roasting.

The seed of the wild Carrot was at one time esteemed as a valuable remedy for calculous complaints, and a decoction of the whole plant has been administered with the same idea. The foliage of the Carrot is remarkably pretty, not only on account of its feathery appearance, but from the variety of lines which it displays. In the time of James I., ladies wore it in their head-dresses, and at the present time there is no prettier addition to ornamental arrangements of flowers for the table or the drawing-room. In winter I have often seen pretty delicate fern-like decorations produced by cutting off the end of a large carrot and placing it in a saucer of water in a warm place. The elegant tuft of green leaves soon begins to sprout and forms as lovely an object as one obtained at a great price and with much difficulty.

Tribe VIII.—CAUCALINEÆ.

Cremocarp ovoid, slightly compressed laterally, often subdidymous; columella distinct; mericarps with 5 primary filiform ridges, clothed with hairs or spines, and 4 secondary ridges, usually more prominent, and bearing stronger prickles. Seed with a longitudinal furrow on the face next the columella. Umbels usually compound.

GENUS XXXI.—CAUCALIS. *Linn.*

Calyx-limb of 5 teeth. Petals obovate, notched, with an inflexed lobe, the exterior ones generally radiant and bifid. Cremocarp oval-ovoid or oblong-ovoid, slightly laterally compressed; columella 2-cleft or 2-partite; mericarps with 3 primary ridges on the back and 2 on the inner face, hairy or spiny, and 4 secondary ridges, generally more prominent, clothed with usually stronger spines: or sometimes the secondary ridges are obsolete, and the whole of the space between the primary ridges spiny. Involucre none or of few leaves. Albumen of the seed involute or furrowed on the face next the columella.

Herbs of various habit, with white or pink polygamous flowers, the exterior ones fertile, the interior ones male.

The name of this genus of plants comes from the two Greek words κεω (*keo*), I lie down, and καυλος (*kaulos*), a stem.

Sub-Genus I.—EU-CAUCALIS. (Caucalis, *Hoffm.*)

Calyx-limb of 5 lanceolate teeth. Cremocarp slightly laterally compressed; mericarps with the primary ridges filiform, bristly or with small spines; secondary ones prominent, bearing a single row of subulate prickles. Involucre absent, or of 1 or 2 linear herbaceous leaves.

SPECIES I.—CAUCALIS DAUCOIDES. *Linn.*

Plate DCXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 786 *bis*.

Stem erect, slightly branched, striate, glabrous. Leaves bipinnate, with the leaflets oblong, pinnatifid; ultimate segments short, oblong, blunt. Umbels usually of 2 or 3, rarely 4 or 5 rays. Flowers polygamous, fertile ones 2 or 3, subsessile, exterior; male ones on longer stalks. Involucre generally absent; involucel of 2 or 3 linear acute herbaceous leaves. Cremocarp elliptical-ovoid; primary ridges with very short spines; secondary ridges with rather distant broad-based spreading smooth spines, nearly equalling the diameter of the fruit, hooked at the apex.

A weed in corn-fields, particularly in chalky districts. Local,

but occurring in most of the Southern and Eastern counties, as far North as Yorkshire and Durham.

England. Annual. Summer.

Stem erect, 6 to 18 inches high, branched; branches making a large angle with the stem. Leaves very shortly stalked, deltoid in outline, finely divided. Rays of the umbel $\frac{3}{4}$ to 1 inch long, nearly glabrous on the outside, rough within. Flowers $\frac{1}{10}$ inch across, white, frequently tinged with rose-colour, slightly radiant. Petals obovate-roundish, notched, with an incurved point. Cremocarp $\frac{3}{8}$ to $\frac{1}{2}$ inch long, pale-olive, with the spines paler; secondary ridges very prominent, with the spines rather distant, spreading at right angles. Plant glabrous, with the stem immediately below the nodes hispid; petioles and leaves with distant spreading pellucid hairs.

Small Bur-Parsley.

French, *Caucalide à Feuilles de Carotte.* German, *Möhrenförmige Haftdolde.*

Sub-Genus II.—TURGENIA. *Hoffm.*

Calyx of 5 subulate teeth. Cremocarp sub-didymous; mericarps with the 3 dorsal primary and the secondary ridges prominent, the former armed with 3 rows of rough spines, the latter with 1 row, the primary ribs on the commissural face with tubercles. Involucre of 3 to 5 elliptical scarious leaves, with an herbaceous stripe in the centre.

SPECIES II.—CAUCALIS LATIFOLIA. *Linn.*

PLATE DCXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 564.

Turgenia latifolia, *Hoffm. Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 344. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 675.

Stem erect, nearly simple, puberulent, furrowed. Leaves pinnate, with the leaflets strapshaped, short, inciso-serrate; ultimate segments or teeth triangular. Umbels of 2 to 4 rays. Flowers polygamous, fertile ones 2 or 3, exterior, subsessile; male ones on longer stalks. Involucre of 3 to 5 strapshaped-elliptical leaves, with very broad scarious margins; involucels of 3 to 5 oblong-strapshaped wholly scarious leaves. Cremocarp elliptical-ovoid, constricted between the mericarps, the primary and secondary

ridges with numerous retrorsely echinate subulate ascending-spreading spines, nearly as long as the diameter of the fruit.

A weed in cornfields. Very rare. About Langport, Somerset. Formerly abundant in Cambridgeshire, but believed to be now extinct there. Hudson gives about Crooks Easton, Hampshire. Messrs. Webb and Colman have seen dried specimens collected in Hertfordshire, and Mr. Motley says 3 specimens were gathered in Carmarthenshire. It has also been reported from Bedfordshire.

England. Annual. Summer and Autumn.

Stem erect, 6 to 18 inches high. Leaves very shortly stalked, oblong-triangular in outline, with the leaflets $\frac{3}{4}$ to 2 inches long, parallel-sided. Rays of the umbel $\frac{3}{4}$ to 1 inch long, thickly clothed with very short hairs, and sparingly with large cartilaginous ascending ones. Flowers radiant, $\frac{1}{6}$ inch across, pink. Petals roundish-obovate, notched, with an inflexed lobe. Cremocarp $\frac{1}{4}$ to $\frac{3}{8}$ inch long, olive; spines brownish-purple, with small slightly reflexed or spreading short bristles. Plant hispid, dull-green.

Great Bur-Parsley.

French, *Caucalide à Larges Feuilles.*

Sub-Genus III.—TORILIS. *Hoffm.*

Calyx of 5 small lanceolate teeth. Cremocarp ovoid, laterally compressed, sub-didymous. Mericarps with the primary ridges filiform, hispid, the secondary ones obsolete, but the whole of the interstices clothed with spines, at least in the exterior fruits. Involucre of 1 to 5 leaves, or absent.

SPECIES III.—CAUCALIS INFESTA. *Curtis.*

PLATE DCXIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 30.

Torilis infesta, *Bab.* Man. Brit. Bot. ed. v. p. 152. *Hook. & Arn.* Brit. Fl. ed. viii. p. 188.

T. Helvetica, *Gmel.* *Fries*, Sum. Veg. Scand. p. 22. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 345. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 675. *D. C.* Prod. Vol. IV. p. 219.

Stem erect, corymbosely branched, usually with numerous short divaricate branches, striate, sparingly hairy in the upper part, with the hairs reversed and adpressed. Leaves bipinnate or pinnate with

the leaflets pinnatifid; terminal leaflet of the upper leaves rather elongate and inciso-serrate. Umbels erect in bud, long-stalked, of 2 to 8 rays. Involucre of a single oblong or strapshaped scarious leaf, or absent. Flowers radiant, polygamous, fertile ones 3 to 12, shortly stalked, exterior. Cremocarp elliptical-ovoid, not attenuated towards the apex, entirely covered with very numerous retrorsely-echinate subulate spreading spines, hooked at the apex, rather shorter than the diameter of the fruit. Styles not twice as long as the stylopods.

A weed in cultivated fields and by roadsides, especially in chalky districts. Common, and generally distributed in England as far North as Lancashire and Yorkshire.

England, Ireland. Biennial. Summer and Autumn.

Stem 6 inches to 1 foot high, branched throughout, or more rarely only towards the summit; branches divaricate. Leaves triangular in outline, shortly stalked, with dilated scarious-edged petioles. Umbel rays $\frac{1}{4}$ to $\frac{3}{4}$ inch long; pedicels shorter than the cremocarp. Involucels of 5 or 6 linear-acuminate herbaceous strigosely hairy leaves. Flowers $\frac{1}{10}$ inch across, white, frequently tinged with pink. Cremocarp $\frac{1}{6}$ inch long, very bristly, dark purplish-olive; bristles variable in length, but generally nearly as long as the breadth of the cremocarp, rough, with the asperities pointing backwards. Plant often resembling a small bush, rather dull-green, with the upper part of the stem, umbel rays, pedicels, and leaves more or less strigosely hairy.

Field Hedge-Parsley.

German, *Feindlicher Haftdolde.*

SPECIES IV.—CAUCALIS ANTHRISCUS. *Huds.*

PLATE DCXX.

Billot, Fl. Gall. et Germ. Exsicc. No. 130.

Torilis Anthriscus, *Gmel.* *Bab.* Man. Brit. Bot. ed. v. p. 151. *Hook. & Arn.* Brit. Fl. ed. viii. p. 188. *D. C.* Prod. Vol. IV. p. 218. *Fries*, Sum. Veg. Scand. p. 22. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 344. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 645.

Tordylium Anthriscus, *Linn.* Sp. Plant. p. 346.

Stem erect, corymbosely branched, with few elongated ascending branches, striate, sparingly hairy, with the hairs reversed and adpressed. Leaves bipinnate or pinnate, with the leaflets pinnatifid; terminal leaflet of the upper leaves elongate and inciso-serrate. Umbels long-stalked, of 5 to 12 rays. Involucre of about 5 subu-

late herbaceous leaves. Flowers not distinctly radiant; fertile ones 6 to 20, stalked, exterior. Cremocarp ovate-ovoid, attenuated towards the apex, entirely covered with numerous patently echinate spreading incurved subulate spines, not hooked at the apex, shorter than the diameter of the fruit. Styles more than twice as long as the stylopods.

On hedge-banks and bushy waste places, borders of fields, &c. Very common, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Biennial. Summer.

Stem erect, 1 to 4 feet high, with rather few branches and long internodes. Leaves with the pinnæ blunter and less deeply divided than in C. infesta. Rays of the umbel $\frac{1}{2}$ to 1 inch long, rough, with adpressed hairs; pedicels of the exterior fruits longer than the cremocarp. Flowers $\frac{1}{12}$ inch across, white, often tinged with pink. Cremocarp $\frac{1}{8}$ inch long, dark-olive, with the bristles fewer and stouter than in C. infesta, and without the terminal hook. Plant dark-green, sparingly strigosely hairy.

Upright Hedge-Parsley.

French, *Caucalide Anthrisque.*

SPECIES V.—CAUCALIS NODOSA. *Huds.*

PLATE DCXXI.

Billot, Fl. Gall. et Germ. Exsicc. No. 787.

Torilis nodosa, *Gärt.* *Bab.* Man. Brit. Bot. ed. v. p. 152. *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 188. *D. C.* Prod. Vol. IV. p. 219. *Fries*, Sum. Veg. Scand. p. 22. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 345. *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 676.

Stem decumbent, usually dichotomously branched from the base, and with the branches again sparingly branched, striate, with reversed adpressed hairs. Leaves bipinnate or pinnate, with the leaflets deeply pinnatifid, the terminal leaflet of the upper leaves not longer than that of the lower leaves. Umbels opposite the leaves, sessile or subsessile, of 2 or 3 very short rays. Involucre absent. Flowers not radiant, fertile ones 6 to 12, subsessile. Cremocarp ovate-ovoid, slightly attenuated towards the apex, tuberculated; external fruits with the outer mericarp entirely covered with numerous spreading, retrorsely-echinate straight subulate spines, hooked at the apex, longer than the diameter of the fruit. Styles not exceeding the length of the stylopods.

On dry sunny banks. Generally distributed and rather frequent

in England; rare in Scotland, where it is not certainly known to grow North of Edinburgh, though it has been reported from near Montrose.

England, Scotland, Ireland. Biennial. Spring and Summer.

Stem 6 inches to 2 feet long, generally diffuse, often procumbent unless supported by the adjacent herbage, branched principally towards the base. Leaves smaller and with much finer divisions and shorter stalks than in C. infesta and C. Anthriscus. Umbel rays generally less than $\frac{1}{5}$ inch long, so that the fruits appear in subsessile bunches opposite the leaves. Cremocarp $\frac{1}{5}$ to $\frac{1}{5}$ inch long, the external ones with the outer mericarp spiny. Plant yellowish-green, more or less strigosely hairy, especially on the leaves and umbel rays.

Knotted Hedge-Parsley.

French, *Caucalide Noueuse.* German, *Knotenfrüchtiger Haftdolde.*

Tribe IX.—SCANDICINEÆ.

Cremocarp elongate-ovoid or cylindrical, often sub-didymous, attenuated at the apex or beaked; columella distinct; mericarps with 5 primary filiform ridges, sometimes obliterated. Seed with a deep channel on the side next the columella. Umbels compound.

GENUS XXXII.—CHÆROPHYLLUM. *Linn.*

Calyx-limb obsolete. Petals obovate, truncate or notched, with an inflexed lobe. Cremocarp lanceolate-ovoid or sub-cylindrical, slightly laterally compressed, attenuated at the summit, and frequently prolonged into a beak shorter than the rest of the fruit; columella free, more or less deeply 2-cleft; mericarps with the 5 primary ridges frequently obliterated, in which case the beak of each presents 5 ridges; interstices with or without vittæ. Albumen of the seed with a deep furrow upon the face next the columella. Involucre none, or rarely of a single leaf.

Herbs with ternate-pinnately decompound leaves, and compound umbels of white flowers, the central ones male.

The name of this genus of plants is from two Greek words, χαιρω (*chairo*), I esteem, and φυλλον (*phullon*), a leaf. An estimable plant, but we fail to see the force of the application to the plants that now belong to the family.

Sub-Genus I.—ANTHRISCUS. *Hoffm.*

Cremocarp with the ridges obsolete and without vittæ, terminating in a short beak on which the ridges are apparent.

SPECIES I.—CHÆROPHYLLUM ANTHRISCUS. *m.aL*

Plate DCXXII.

Billot, Fl. Gall. et Germ. Exsicc. No. 787.

Anthriscus vulgaris, *Pers.* *Bab.* Man. Brit. Bot. ed. v. p. 152. *Hook. & Arn.* Brit. Fl. p. 185. *D. C.* Prod. Vol. IV. p. 224. *Fries*, Sum. Veg. Scand. p. 22. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 347. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 741.

Scandix Anthriscus, *Linn.* *Sm.* Eng. Bot. No. 818.

Stem ascending, weak, slightly thickened below the nodes, branched throughout but especially at the base, hollow, striate, glabrous. Umbels shortly stalked, opposite the leaves. Rays 3 to 6, glabrous. Involucel complete, of 4 or 5 linear-lanceolate acuminate ciliated spreading leaves. Cremocarp lanceolate-ovoid, with short spreading incurved rough spines; beaks glabrous, about $\frac{1}{3}$ the length of the rest of the fruit.

On dry banks and by roadsides and in hedge-banks. Common, and generally distributed. Rare in the North of Scotland, though it has been observed as far North as Sutherlandshire.

England, Scotland, Ireland. Biennial. Spring and Summer.

Stem 6 inches to 2 feet high, somewhat dichotomously branched, swollen below the nodes. Leaves deltoid in outline, somewhat ternately bipinnate or tripinnate, with the leaflets deeply divided into short oblong blunt mucronate segments. Petioles dilated, ciliated with woolly hairs. Umbels on stalks usually shorter than the full-grown rays, the latter $\frac{1}{4}$ to $\frac{3}{4}$ inch long, divaricate. Flowers very minute, white, radiant. Cremocarp surrounded by a ring of hairs at the base, dark-olive, $\frac{1}{8}$ to $\frac{1}{6}$ inch long, of which the glabrous and angular beak is about one-quarter; mericarps thickly covered with short spines. Plant light-green, the leaves sparingly clothed with short cartilaginous hairs.

Common Chervil.

French, *Cerfeuil hérissé.* German, *Kälberkropf.*

This plant was in former times in great request as a culinary herb, and is still occasionally cultivated, though we no longer hold it in the same estimation as did Gerarde, who says:—

"The seeds eaten as a sallad whiles they are yet green, with oile, vineger, and

pepper, exceed all other sallads by many degrees, both in pleasantnesse of taste, sweetnesse of smell, and wholesomenesse for the cold and feeble stomacke.

"The roots are likewise most excellent in a sallad; if thay be boiled and afterwards dressed as the cunning cooke knoweth how better than myselfe; notwithstanding I use to eat them with oile and vineger, being first boiled; which is very good for old people that are dull and without courage; it rejoiceth and comforteth the heart, and increaseth their strength."

SPECIES II.—CHÆROPHYLLUM SATIVUM. *Lam.*

PLATE DCXXIII.

Anthriscus Cerefolium, *Hoffm. Bab.* Man. Brit. Bot. ed. v. p. 152. *Hook. & Arn.* Brit. Fl. ed. viii. p. 185. *D. C.* Prod. Vol. IV. p. 223. *Fries*, Sum. Veg. Scand. p. 22. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 347. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 741.

Scandix Anthriscus, *Linn. Sm.* Eng. Bot. No. 1268.

Stem erect, weak, nearly equal, slightly branched throughout, hollow, striate, glabrous. Umbels subsessile or very shortly stalked, mostly opposite the leaves; rays 3 to 5, pubescent. Involucel dimidiate, of 2 or 3 linear-lanceolate ciliated spreading-reflexed leaves. Cremocarp sub-cylindrical, unarmed, finely shagreened, beak about half the length of the rest of the fruit.

In waste ground and hedges. Rare, and no doubt always escaped from cultivation, and not permanent in its stations.

[England, Scotland, Ireland.] Annual or Biennial. Summer.

Extremely like C. Anthriscus, but with the main stem stouter, the lateral umbels generally subsessile, the ultimate leaflets broader and less deeply divided, the flowers larger. Umbels nearly sessile, with hairy rays and dimidiate involucels. The fruit is very different, not surrounded by a ring of bristly hairs at the base, dusky, $\frac{3}{8}$ to $\frac{1}{2}$ inch long, glabrous, without any spines, with the beak paler, much longer in proportion, the stylopods and styles much longer.

Garden Chervil.

French, *Cerfeuil Anthrisque.* German, *Gemeiner Kerbel.*

This is perhaps the most generally known of all our wild umbelliferous plants, covering with its finely divided hairy foliage many of our neglected hedge-banks and field borders. The leaves have a sweetish aromatic taste, and might be employed as a green vegetable; but the roots are said to be poisonous: cases are mentioned of fatal results following the partaking of it. The stems and leaves yield a beautiful but not very permanent green dye.

Gerarde tells us that Pliny says—"this is that herbe which Aristophanes objected in sport to the poet Euripides, that his mother was wont to sell no right potherbe but scandix, or shepheard's needle." By this name the Wild Chervil was known in olden times.

SPECIES III.—CHÆROPHYLLUM SYLVESTRE. *Linn.*

PLATE DCXXIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2852.

Anthriscus sylvestris, *Bab.* Man. Brit. Bot. ed. v. p. 153. *Hook. & Arn.* Brit. Fl. ed. viii. p. 185. *D. C.* Prod. Vol. IV. p. 223. *Fries*, Sum. Veg. Scand. p. 22. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 346. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 742.

Stem erect, stout, equal, branched in the upper part, hollow, furrowed, generally hispid in the lower part. Umbels stalked, terminal; rays 6 to 16, glabrous. Involucel complete, of 3 to 7 linear-lanceolate reflexed ciliated leaves. Cremocarp elliptic-cylindrical, indistinctly beaked, unarmed, smooth; beak about $\frac{1}{6}$ the length of the rest of the fruit.

In hedge-banks, meadows, open parts of woods, &c. Very common, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Biennial. Spring and Summer.

Root a thickened tapering tap-root. Stem 2 to 4 feet high. Radical leaves on long stalks, stem-leaves with shorter stalks, with dilated pubescent petioles; lamina deltoid in outline, somewhat ternately bi- or tri-pinnate; leaflets pinnatifid, with acute lanceolate segments. Umbel rays 1 to 2 inches long. Fruit surrounded at the base by a ring of hairs, $\frac{1}{4}$ inch to $\frac{3}{8}$ inch long, olive, shining, narrowing insensibly into the very short 10-ribbed beak. Plant bright-green, usually slightly hairy, but variable in this respect.

Dr. J. E. Gray (Seemann's "Journal of Botany," 1863, p. 296) mentions that he finds about Kew two forms of this plant growing together, one with a stout deeply-furrowed angular green stem, the other with a much more slender, less deeply and regularly furrowed purplish stem.

Anthriscus abortivus, *Jord.* Billot, No. 2851, appears to be a variety or sub-species with leaves less divided, and without the ring of hairs at the base of the fruit: it is not unlikely to occur in upland districts.

Wild Chervil, Cow-Parsley.

French, *Cerfeuil Sauvage.* German, *Wald Kerbel.*

SUB-GENUS II.—EU-CHÆROPHYLLUM. (CHÆROPHYLLUM, *Hoffm.*)

Cremocarp attenuated at the apex, but without a distinct beak; mericarps with 5 filiform ridges; interstices each with a single vitta.

SPECIES IV.—CHÆROPHYLLUM TEMULUM. *Linn.*

PLATE DCXXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2852.
C. temulentum, *Sm.* Eng. Bot. No. 1521.
Myrrhis temulenta, *Sm.* Eng. Fl. Vol. II. p. 51.

Stem erect, solid, rather stout, branched in the upper part, slightly thickened beneath the nodes, striate, hairy, blotched with purple. Umbels stalked, terminal rays 6 to 16, hairy. Involucels complete, of 5 to 8 lanceolate-acuminate ciliated spreading reflexed leaves. Petals glabrous. Cremocarp sub-cylindrical, slightly attenuated towards the apex; columella split nearly halfway down; mericarps each with 5 thick blunt ridges; beak none. Styles slightly recurved, as long as the stylopods.

In hedge-banks and borders of fields and waste places. Common, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Root slender, tapering. Stem 1 to 4 feet high. Leaves deltoid in outline, bipinnate, with the leaflets deeply pinnatifid. Umbel rays 1 to 2 inches long. Cremocarp $\frac{1}{4}$ inch long, blackish-brown, with the ridges paler. Plant dull-green, sparingly hairy.

This and Conium maculatum are the only two British umbellates which have the stem blotched with purple.

Rough Chervil.

French, *Cerfeuil Penché.* German, *Betäubender Kälberkropf.*

GENUS XXXIII.—MYRRHIS. *Tournef.*

Calyx-limb obsolete. Petals obovate, notched, with an inflexed lobe. Cremocarp elliptical-ovoid, slightly laterally compressed, smooth, pointed at the apex but not prolonged into a beak; columella free, 2-cleft at the apex; mericarps with 5 very prominent sharply-keeled hollow ribs; interstices without vittæ. Albumen of the seed with a deep furrow on the face next the columella. Involucre none.

Herbs with ternate-pinnately decompound leaves and large compound umbels of white slightly radiant flowers, central flowers of each umbellule male.

The name of this genus of plants is derived from μυρον (*muron*), perfume, or μυρρα (*murra*), myrrh, or possibly from the Hebrew word *mara*, bitter.

SPECIES I.—MYRRHIS ODORATA. *Scop.*

PLATE DCXXVI.

Scandix odorata, *Linn.* *Sm.* Eng. Bot. No. 697.

Leaves with short scattered white hairs beneath. Leaves of the involucels linear-lanceolate, acuminate, scarious, ciliated with woolly hairs.

In pastures in mountainous districts. Common in the North of England and in Scotland, as far North as Ross-shire; it also occurs in a few localities in the South of England, but is doubtless an introduced plant there.

England, Scotland, Ireland. Perennial. Spring and Summer.

Root fleshy, passing gradually into the thick wrinkled rootstock. Stem erect, 2 to 4 feet high, round, striated, clothed with short distant hairs, corymbosely branched in the upper part. Radical leaves very large, deltoid in outline, ternately tripinnate, with the leaflets pinnatifid, the segments acute, rounded on the outer side, very finely hairy above, much more so beneath, with short white stiff hairs; stem-leaves with short dilated petioles, much smaller and less divided than the radical ones. Umbels terminal, stalked, with 6 to 12 rays, 1 to 1½ inch long; pedicels about ¼ inch long. Flowers ⅛ inch across, only a few of the exterior ones perfect or female. Cremocarp subcylindrical-prismatic, dark blackish-brown, ¼ inch long, acuminated at the apex; mericarps with 5 very prominent keeled ridges, which are remotely denticulate, and have hairs springing from the denticulations. Plant pale-green.

Sweet Cicely.

French, *Myrrhe Odorante.* German, *Wohlriechende Süssdolde.*

This plant, like the chervil, though formerly cultivated as a potherb, has fallen greatly into disuse in England. Our continental neighbours, more remarkable than ourselves for the care with which they prepare their dishes, still use it, and contrive to blend the flavours of different herbs so as to produce a pleasant effect on the palate. The whole plant is aromatic, and was formerly applied medicinally as a stimulant and carminative, but has given place to more active remedies. In Italy it is greatly esteemed, and not only the leaves but the green seeds ground small are much used in salads. "Sweet Chervil, gathered while it is young and put among other herbs in a sallet," says Parkinson, "addeth a marvellous good relish to all the rest."

The seeds have the flavour of anise, and are used in the North of England for polishing and perfuming oak floors and furniture. The smell of this plant attracts bees, and the insides of empty hives are often rubbed with it before placing them over swarms to induce them to enter.

GENUS XXXIV.—SCANDIX. *Linn.*

Calyx-limb obsolete or indistinctly 5-toothed. Petals obovate, truncate or emarginate, with an inflexed lobe. Cremocarp laterally compressed, oblong-ovoid, produced into a long beak much exceeding the rest of the fruit; columella free, entire or shortly 2-cleft at the summit; mericarps with 5 obtuse equal ridges; interstices each with an indistinct vitta, or without any. Albumen of the seed deeply furrowed on the face next the columella. Involucre none, or of few leaves.

Annual herbs, having pinnately decompound leaves, with finely-divided segments. Umbels of few rays; flowers white.

The derivation of the name of this genus of plants appears to be from some word now lost, which signified to give pain, as a prick in the flesh—hence *scandal*.

SPECIES I.—SCANDIX PECTEN-VENERIS. *Linn.*

PLATE DCXXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1210.
S. Pecten, *Hook. & Arn.* Brit. Fl. ed. viii. p. 184.

Umbels simple or of 2 thickened rays. Leaves of the involucels cut at the apex. Beak 4 or 5 times as long as the rest of the fruit, dorsally compressed.

In cultivated fields. Common in England, but becoming more rare in Scotland, though it has been found as far North as Orkney.

England, Scotland, Ireland. Annual or Biennial. Summer and Autumn.

Root slender, tapering. Stem dividing into several at the base, the divisions weak, ascending, 6 inches to 3 feet high, branched. Leaves oblong in outline, bi- or tri-pinnate, with the leaflets pinnatifid or cut at the apex into short strapshaped acuminate lobes. Umbels lateral and terminal, sometimes simple, sometimes of 2 thickened rays $\frac{3}{4}$ to $1\frac{1}{2}$ inch long. Involucels of numerous leaves, those on the inner side sometimes lanceolate-acuminate, entire; the outer ones all cleft into 2 to 6 lobes at the apex. Flowers $\frac{1}{8}$ to $\frac{1}{4}$ inch across, radiant. Cremocarp, including the beak, $1\frac{1}{2}$ to 3 inches long, blackish-brown, with the ridges and beak pale-brown; the mericarps and margins of the beak with small distant pale warts terminating in short prickles which point towards the apex; beak sword-shaped, furrowed on the inside of each of its two halves. Plant pale-green, glabrous, with the dilated petioles ciliated with

long white hairs, the margins of the leaf-segments with short prickle-like hairs.

Common Venus'-Comb.

French, *Scandix Peigne de Vénus.* German, *Kammförmiger Nadelkerbel.*

This is a troublesome weed, to which, though slightly aromatic and acrid, no particular use is attributed. Its common name is owing to the fact that the slender tapering beaks of the seed-vessels are set together like the teeth of a comb.

Tribe X.—SMYRNIEÆ.

Cremocarp shortly-ovoid or sub-globular, laterally compressed, usually didymous, not attenuated or beaked at the apex; columella usually distinct; mericarps with 5 primary filiform or winged ridges, sometimes obliterated. Albumen of the seed with a deep channel on the side next the columella. Umbels compound.

GENUS XXXV.—ECHINOPHORA. *Linn.*

Calyx-limb of 5 teeth. Petals obovate, emarginate, with an inflexed lobe the outer ones often radiant and bifid. Cremocarp ovate-ovoid, scarcely laterally compressed, shortly acuminated at the apex, enclosed in a cavity at the extremity of the peduncle, surrounded by the rays and calyces of the exterior barren flowers and by the involucel; columella indistinct; mericarps with 5 depressed undulated equal ridges; interstices with a single vitta, covered with a cobweb-like membrane. Albumen of the seed deeply furrowed on the inner face. Involucre many-leaved, prickly.

Herbs having decompound leaves, with the segments usually spinescent. Central flower of the umbel female, the exterior ones male with the ovary abortive.

The name of this genus of plants comes from the words ἐχῖνος (*echin s*), a hedgehog, and φερω (*phero*), I bear, in allusion to the strong stiff spines of the involucrum.

Species 1.—ECHINOPHORA SPINOSA. *Linn.*

Plate DCXXVIII.

Leaves bipinnate; segments subulate, spinous. Leaves of the involucre entire, spinous. Flowers white, radiant. Plant sparingly pubescent with minute hairs.

On sandy sea-shores. Now extinct. Said to have been found near Weymouth, Dorset; between Faversham and Leasalter, between Whitstable and Isle of Thanet, by Sandwich and near

West-chester, Kent; and at Roosebeck, in Low Furness, Lancashire.

[England.] Perennial. Autumn.

Stem erect or ascending, angular, furrowed, corymbosely branched, 6 inches to 1 foot high. Leaves with few distant spine-like segments. Umbel rays 5 to 8, thickened and dilated towards the apex in fruit. Leaves of the involucel broadly lanceolate, spinous, about as long as the flowers. Male flowers stalked, with the calyx-teeth radiant, their pedicels and calyx-teeth at length connivent round the solitary central fertile flower, the ovary of which is immersed in the hollow dilated apex of the umbel ray. Cremocarp ovoid-acuminate, crowned by the 5 subulate calyx-teeth, the conical stylopods, and the short erect styles; one of the mericarps often abortive. Plant finely pubescent, glaucous.

Of this species I have only seen foreign specimens.

Sea Prickly-Samphire.

GENUS XXVII.—CONIUM. *Linn.*

Calyx-limb obsolete. Petals obovate, slightly notched, with a very short inflexed lobe. Cremocarp ovate, globose, laterally compressed, smooth; columella free, with the apex 2-cleft; mericarps with 5 prominent somewhat winged crimped equal ridges, the lateral ones marginal; interstices without vittæ. Albumen of the seed with a deep narrow furrow on the face next the columella. Involucre and involucel of 3 to 5 leaves.

Herbs with ternate-pinnately decompound leaves and compound umbels of white flowers, the interior ones often male.

The name of this genus of plants is said by Linnæus to originate in the words κωνις (*konis*), or κονια (*konia*), dust or powder; but the application of the term is not evident.

SPECIES I.—CONIUM MACULATUM. *Linn.*

PLATE DCXXIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 2473.

Involucel dimidiate, of 3 to 5 ovate-lanceolate subscarious leaves, shorter than the rays of the umbellule.

Roadsides, waste places, and open parts of woods. Rather common, and generally distributed.

England, Scotland, Ireland. Biennial. Summer and Autumn.

Stem erect, 2 to 6 feet high or more, striate, smooth, glabrous,

green and almost always spotted or blotched with purple, paniculately branched. Radical leaves very large, deltoid in outline, bipinnate, with the leaflets very deeply pinnatifid; the segments pinnatifid or cut, the ultimate segments short, oblong-acute; stem-leaves similar but smaller and less compound, with short dilated petioles. Umbels terminal and axillary, shortly stalked, of 10 to 20 glabrous rays, $\frac{3}{4}$ to 1 inch long. Involucre reflexed, of few leaves, similar to those of the involucel. Flowers $\frac{1}{8}$ inch across, slightly radiant. Cremocarp dull-green, $\frac{1}{6}$ inch, about as long as broad, tapering towards the apex, with thin elevated waved ridges. Plant glabrous.

This is the only short-fruited umbelliferous plant found in Britain which has a spotted stem.

Common Hemlock, Herb Bennet.

French, *Cigue Commune ou tachée.* German, *Gefleckter Schierling.*

The Hemlock is such a dangerous plant, that all people living in the country should make themselves acquainted with its appearance. It is very abundant in most parts of Great Britain, and to the uninstructed looks very like cow-parsley or many other harmless herbs. Its poisonous principle, which is alike dangerous to man and animals, resides chiefly in the roots and leaves, and may be extracted by water. Its energy varies according to season and locality. The active principle is known to chemists under the name of *conia*. It is an alkaloid, and is very soluble in alcohol and ether, combining with diluted acids to form salts. It is much employed in modern medicine as an antispasmodic and anodyne, and in the last edition of the British Pharmacopœia we find it prescribed in several forms. It is used in diseases of the glands, in scrofulous and cutaneous disorders; but it is far too powerful a remedy to be employed by any but a regular practitioner. Dr. Christison's experience is, that *conia*, whether free or combined, is a most powerful poison. Dr. Taylor tells us that as it exists in Hemlock, it undoubtedly operates by absorption, yet when insulated it destroys life so rapidly that it must be supposed to kill without entering the blood. It produces general palsy without insensibility, and with slight occasional twitches only of the limbs of the animal. He says, "It is singular that the heart does not appear to be affected by the poison, as this organ pulsates even after other signs of life have ceased. Death appears to be due to asphyxia, from the general paralysis of the respiratory muscles." A single drop of conia applied to the eye of a rabbit killed it in nine minutes, and three drops killed a strong cat in a minute and a half. Cases of accidental poisoning by Hemlock are not unfrequent, generally from its being mistaken for other herbs. Orfila relates an instance where some soldiers ate it in soup. They appeared as if intoxicated. The one who had eaten most became senseless in less than two hours after swallowing the poison, and though emetics were soon administered, he died in three hours. In some cases it causes paralysis. Dr. J. Hughes Bennett relates a case of a man eating a quantity of Hemlock in mistake for parsley. Soon afterwards he was seized with paralysis of the lower extremities, then of the arms and body, and three hours after having eaten the Hemlock he died. These accidents should deter any one from allowing Hemlock to grow in gardens or fields where it is likely to be picked by children or ignorant persons. Even the common schoolboy

practice of making whistles of the hollow stems of this and other umbelliferous plants is dangerous and should be discouraged. When dry and mixed with hay the plant seems to lose many of its active properties, for cattle and sheep will eat it in this state with no bad results. John Ray tells us that the thrush will feed on the seeds of the Hemlock without harm; but this observation requires confirmation, though the action of the plant varies greatly on different animals. The Hemlock being an abundant wild plant in Britain, is seldom cultivated. When collected for medical purposes, the leaves should be collected in the month of June, just before the flowers expand, dried quickly in the sun or on tin plates before the fire, and kept in strong bags or vessels excluded from the light. The Hemlock was well known to the ancients, being probably the κωνειον (*koneion*) of the Greeks. Much discussion has taken place as to whether this was the plant used to poison Socrates, or whether it was the Water-Hemlock, *Cicuta virosa*; but competent judges have considered that the description of the poison and its effects given by Plato in the Phædon agrees better with what is known of the common Hemlock than with any other plant. The κωνειον (*koneion*) was the usual poison given to those sentenced to death by the Areopagites, and is supposed to have formed an ingredient in the poison-cup taken by the old men of Ceos. The Conium is probably also the "root of hemlock digged i' the dark," which entered into the witches' caldron, so vividly described by Shakespeare. Dr. Prior gives us the spelling of the Hemlock as used by Gerarde, *Homlock*, coming, he supposes, from *haem* or *healm*, straw, or *haulm* and *leac*, plant, so called from the dry hollow stalks that remain after flowering. Gerarde says,—"Homlock is a very evill, dangerous, hurtful, and poysonous herbe, insomuch that whosoever taketh of it into his body, dieth remedilesse, except the party drinke some wine, that is naturally hot, before the venom hath taken the heart, as Pliny saith; but being drunke with wine, the poison is with greater speed carried to the heart, by reason wherof it killeth presently; therefore not to be applied outwardly, much lesse taken inwardly into the body." We are told that the first physician who endeavoured to bring Hemlock into repute as a medicine and who worked out its properties, was Baron Stoerck, of Vienna, who announced his discovery in 1760. Since that time it has been generally admitted into the list of medicinal poisons or remedies.

GENUS XXXVII.—PHYSOSPERMUM. *Cuss.*

Calyx-limb of 5 teeth. Petals obovate, notched, with an inflexed lobe. Cremocarp short, didymous; columella bipartite; mericarps sub-globose, inflated, with 5 indistinct filiform equal ridges; interstices each with a broad vitta. Albumen of the seed with a broad furrow on the face next the columella. Involucre of 1 to 5 leaves.

Herbs with the leaves principally radical, ternately or ternate-pinnately decompound. Flowers white, in compound umbels with long rays.

The name of this genus of plants is said to be derived from φυσα (*phusa*), a bladder, and σπερμα (*sperma*), a seed, in reference to the tegument not adhering to the seed in its young state.

SPECIES I.—PHYSOSPERMUM CORNUBIENSE. *D. C.*

PLATE DCXXX.

P. Cornubiense et P. aquilegifolium, *D. C.* Prod. Vol. IV. p. 246.
P. aquilegifolium, *Koch. Gr. & Godr.* Fl. de Fr. Vol. I. p. 748.

Radical leaves on long stalks, tri-ternate, glabrous. Stem-leaves with short dilated petioles, those at the base of the branches often without any lamina.

In bushy places. Very local. About Bodmin in Cornwall, and near Tavistock, Devon.

England. Perennial. Summer and Autumn.

Rootstock slender, brown. Stem erect, 1 to 4 feet high, slender, furrowed, paniculately branched in the upper part. Radical leaves on very long stalks, deltoid in outline, with 3 stalked primary leaflets, each of which consists of 3 stalked secondary leaflets, and these again of 3 3-cleft leaflets, the central one stalked, the lateral ones sessile; ultimate leaflets cut towards the apex. Stem with leaves only at the bases of the branches, the lowest one generally with 3 linear-lanceolate entire or cleft leaflets, the uppermost ones reduced to lanceolate sheaths without any lamina. Umbels on long stalks, with 10 to 20 glabrous furrowed rays, which are slightly curved inwards, 1 to 2 inches long; pedicels numerous, longer than the fruit. Involucre of few lanceolate leaves; involucel dimidiate, of 1 to 5 linear acuminate leaves. Flowers not distinctly radiant, $\frac{1}{6}$ inch across. Calyx-teeth short, deltoid-triangular. Cremocarp $\frac{1}{6}$ inch long and about as broad, consisting of 2 sub-globular chestnut-brown bladder-like mericarps, with the ridges nearly obsolete. Stylopods large, conical. Styles longer than the stylopods, reflexed. Plant dark-green, glabrous, with the edges of the leaves rough with small prickles.

I am indebted to Mr. T. N. Archer Briggs for the ripe fruit of this species, from near Calstock, Cornwall.

P. aquilegifolium seems to me not distinct from P. Cornubiense even as a variety.

Cornish Bladder-seed.

GENUS XXXVIII.—SMYRNIUM. *Linn.*

Calyx-limb obsolete. Petals lanceolate or elliptical, entire, acuminate, with the point incurved. Cremocarp short, laterally compressed, sub-didymous; columella free, bipartite; mericarps sub-globular, not inflated, with 5 ridges, the 3 dorsal ones elevated, the lateral pair indistinct; interstices each with a single vitta. Seed with the edges of the albumen involute, so that a cross

section has a hollow space which resembles the arrangement of the vascular bundles * in the stipes of the common Brake Fern. Involucre various.

Herbs with the leaves various, the flowers yellow or yellowish-green, often polygamous. Fruit black when ripe.

The name of this genus of plants, derived from the Greek word σμυρνα (*smurna*), a synonyme of μυῤῥα (*murra*), the odour of Myrrh, is common to many umbelliferous plants. Among others the *Myrrhis odorata*, for which reason it is so named.

SPECIES I.—SMYRNIUM OLUSATRUM. *Linn.*

PLATE DCXXXI.

Billot, Fl. Gall. et Germ. Exsicc. No. 3102.

Stem-leaves biternate or ternate, with much-dilated sheath-like petioles; leaflets of all the leaves ovate or oval, slightly lobed and crenate.

On banks by the coast, in waste places and hedge-banks, especially in the vicinity of ruins. Not uncommon, but probably not native in many of its stations.

England, [Scotland,] Ireland. Perennial or Biennial. Spring.

Root thick, fleshy. Stem erect, 1 to 4 feet high, stout, solid, striate, paniculately branched, the branches on the upper part frequently opposite. Radical leaves on long stalks, triternate, with the leaflets all stalked; lower stem-leaves similar, but with shorter stalks; the upper ones often opposite and simply ternate, with the petioles dilated so as to form a spathe-like sheath. Umbels of 3 to 15 glabrous furrowed rays, $\frac{1}{4}$ to 2 inches long; pedicels about as long as the cremocarp. Flowers $\frac{1}{12}$ inch across, very pale greenish-yellow. Cremocarp $\frac{3}{8}$ inch long and scarcely so broad, black, consisting of 2 semicircular-ovoid mericarps, constricted at the commissure, with prominent ridges, the whole surface irregularly wrinkled. Stylopods conical; styles about as long as the stylopod, reflexed so as to be applied to the stylopod. Plant pale-green, glabrous, slightly shining.

Common Alexanders.

French, *Maceron*. German, *Smyrenkraut* or *Pferdseppich*.

This plant was formally eaten as a salad or potherb, and abounds at the present time in the neighbourhood of old monasteries and other places, in the gardens of which it was at one time cultivated for use. The young shoots and the leaf-stalks were the parts eaten. It has, when raw, somewhat the flavour of celery, and was, like

* Popularly known as "King Charles's Oak."

that herb, blanched by being earthed-up in growing. The fruit when ripe is quite black; whence the old herbalists gave the plant the name of Olus atrum, or Black Potherb. John Ray says it was called Alexanders, because in Italy it had long been called *Herba Alexandrina*, being supposed to come from Alexandria. Dr. Prior tells us that the name is given on account of its being a plant of Macedon, Alexander's country, and that it was formerly called *Petroselinum Macedonicum*. It is the Hipposelinum of Theophrastus and Pliny.

Tribe XI.—CORIANDREÆ.

Cremocarp smooth, globular, or didymous and bi-globular; columella bipartite, more or less adnate to the mericarps; mericarps hemispherical or sub-globular, with the 5 primary ridges depressed and flexuous or represented by furrows, the 4 secondary ones more prominent. Seed concave on the side next the columella, the albumen being inflexed at the top and bottom.

GENUS XXXIX.—CORIANDRUM.

Calyx-limb of 5 unequal teeth. Petals obovate, emarginate, with an inflexed lobe, the exterior ones radiant and bifid. Cremocarp globular, smooth; columella split in the middle, adnate to the mericarps at the base and apex; mericarps falling off united, hemispherical, with the 5 primary ridges depressed and flexuous, and 4 secondary ones and the margins elevated into keels; interstices without vittæ, the only ones present being 2 on the face where the two mericarps meet each other. Albumen of the seed excavated on the face next the columella. Involucre none.

A glabrous herb, with the stem-leaves ternate-pinnately decompound. Flowers white or pink.

The derivation of the name of this genus of plants is not pleasant—it has allusion to its peculiar scent, and comes from the Greek word κορις (*koriannon*), a bug.

SPECIES I.—CORIANDRUM SATIVUM. *Linn.*

Plate DCXXXII.

The only known species.

In fields and waste places, and by the sides of rivers. Rare, and scarcely even naturalized, though frequently escaping from cultivation in Essex and about London.

[England.] Annual. Summer and Autumn.

Stem erect, 1 to 3 feet high, slender, flexuous, paniculately branched. Lowest leaves stalked, pinnate or bipinnate, with roundish or oval slightly lobed and crenately-cut shortly-stalked

leaflets; middle and upper stem-leaves ternately bipinnate, with the leaflets wedge-shaped at the base, rounded at the apex, and divided into numerous strapshaped blunt apiculate segments; segments of the uppermost leaves linear and more divided. Umbels shortly stalked, of 5 to 10 rays, $\frac{1}{2}$ to 1 inch long; pedicels longer than the cremocarp. Involucel dimidiate, of 3 to 5 short linear-acute leaves. Flowers $\frac{1}{4}$ inch across, conspicuously radiant, white often tinged with purplish-pink. Calyx-teeth triangular-subulate, reflexed. Cremocarp $\frac{1}{5}$ to $\frac{1}{6}$ inch long, light-brown, globular, falling off without separating into mericarps when mature. Stylopods elongate-conical; styles longer than the stylopods, divaricate. Plant bright-green, shining, glabrous, intensely fœtid.

Common Coriander.

French, *Coriandre Cultivé.* German, *Gebauter Koriander.*

The fruit of the Coriander is the only part of the plant that seems to have any medical or dietetical reputation. As an aromatic stimulant it has been used from very ancient times. It was employed by Hippocrates and other Greek physicians, and allusion is made to it in the book of Exodus, where Moses compares the manna supplied to the Israelites to "a Coriander seed." When dried, the disagreeable scent and taste of the seed disappear, and it becomes a somewhat pleasant addition to confectionery. In the northern countries of Europe the seeds are sometimes mixed with bread, but the chief consumption of Coriander seed in this country is in flavouring certain alcoholic liquors, for which purpose it is largely grown in Essex. In medicine it is now little used, excepting to disguise other flavours. It is an ingredient in the confection of senna, and enters into the composition of curry-powder. The inhabitants of Peru are so fond of the taste and smell of this herb, that they put it into almost all their dishes in such quantities as to render the odour insupportable, and the taste as objectionable to any but a native.

EXCLUDED SPECIES.

TRINIA KITAIBELII. *Bieb.*

The late Mr. J. Woods believed he had a specimen of this species from Uphill, Somerset; but probably he mistook T. vulgaris for it.

AMMI MAJUS. *Linn.*

Gathered by Dr. St. Brody on the banks of the Severn, near Gloucester.

TORDYLIUM OFFICINALE. *Linn.*

E. B. 2440.

Supposed to have been found near London by Mr. Doody; but Doody's plant was T. maximum.

CHÆROPHYLLUM AUREUM. *Linn.*

E. B. 2103.

By the side of cornfields between Arbroath and Montrose, Forfarshire, and at Corstorphine, Edinburgh (Mr. G. Don). Not found since.

CHÆROPHYLLUM AROMATICUM. *Linn.*

E. B. S. 2636.

By the river Lunan, near Guthrie, Forfarshire (Mr. G. Don). Not found since.

ORDER XXXIV.—ARALIACEÆ.*

Shrubs or trees, more rarely herbs, with round stems, in the shrubby species often climbing or adhering to supporting bodies by radicular fibres. Leaves alternate, very rarely opposite, simple or palmately or pinnately (often ternately) compound or decompound; petioles generally enlarged at the base, but without evident stipules. Flowers usually greenish, perfect or polygamous, regular, axillary or terminal, in simple umbels or heads, which are disposed in irregular racemes or panicles; umbels frequently with an involucre at the base. Calyx of 5 sepals, completely combined and adnate to the ovary, with the limb reduced to a ring, or 5-toothed. Petals 5 or 10, rarely absent, entire, inserted round a fleshy disk, which crowns the ovary. Stamens 5. Ovary adherent to the calyx, crowned with a fleshy usually entire epigynous disk, 2- to 5-celled, each cell with a solitary suspended ovule. Styles 2 to 5, distinct or combined, sometimes very short. Fruit commonly a more or less fleshy berry, usually with as many pyrenes or stones as there are cells; more rarely dry. Seeds anatropous; albumen copious, usually fleshy; embryo minute.

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* This Order ought probably to be combined with Umbelliferæ. Dr. Seemann redistributes the genera of Umbelliferæ and Hederaceæ (which is in the main equivalent to Araliaceæ) according as the æstivation is imbricated (quincuncial) or valvate: this is, however, a purely artificial character, as it removes Crithmum from the Umbelliferæ, and is evidently of little value in this group of plants, as in many others, such as Rubiaceæ, Jasminaceæ, and Gentianaceæ.

GENUS I.—HEDERA. *Linn.*

Calyx-tube adhering to the ovary, limb of 5 teeth; petals 5 or 10, not cohering at the apex, valvate in æstivation; stamens 5 or 10; styles 5 or 10, more or less cohering, frequently united into one. Fruit a berry with 3 to 10 seeds.

Climbing or erect shrubs, with simple or compound leaves. Flowers in simple umbels or heads, arranged in racemes, corymbs, or panicles.

The derivation of the name of this genus of plants is very variously given. One author says it was conferred on the plant by Pliny, and ingeniously conjectured to be a corruption of *adhæret*, it adheres or clings to other trees. Another explanation is that it has been derived from *hedra*, which means *cord* in Celtic. A third gives the origin from hiedra or heath, Scotch heather, because it was and is used for fuel.

SPECIES I.—HEDERA HELIX. *Linn.*

PLATE DCXXXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1212.

Leaves coriaceous, evergreen, those of the clinging or trailing branches nearly as broad as long, sub-cordate or cordate at the base, 3- to 5-lobed; lobes deltoid or triangular; leaves of the non-radicant branches lanceolate, oval-lanceolate, or rhomboidal-oval, acuminate, entire. Flowers in simple dense umbels, somewhat racemosely arranged. Peduncles, pedicels, and calyces clothed with simple stellate hairs, with few rays.

In woods, hedges, and on old buildings and rocks. Common, and generally distributed.

England, Scotland, Ireland. Shrub. Late Autumn.

Stem stout, tortuous, branched, adhering to the trunks of trees, rocks, or walls, by means of very numerous radicular fibres, or trailing over the ground when there is no supporting object within reach. In the latter case never flowering, and with the leaves small, very deeply lobed and veined with white. In the former case, after reaching the top of the support, flowering-shoots are produced, on which the leaves are not lobed and much narrower. At the base of these flowering-shoots the leaves are intermediate in shape. Umbels sub-globose, the terminal one of the raceme the largest. Involucre of numerous broadly triangular concave leaves. Umbel rays longer than the flowers and fruit. Flowers pale greenish-yellow, $\frac{1}{3}$ inch across. Calyx-segments very minute, deltoid. Petals boat-shaped, caducous. Style very short. Berries about the size of peas, black, ripening in spring. Seeds 3 to 5. Plant glabrous. Leaves glossy.

H. canariensis (Willd.), which is a native of the Canary Isles, Madeira, and the North of Africa, is said to have been found wild in Ireland; but Mr. A. G. More informs me that he can obtain no evidence of its occurrence, except where planted. Dr. Seemann (Journ. Bot. 1864, p. 305) considers it a distinct species, known by its uppermost leaves being cordate, its umbels arranged in panicles (rarely and only in young plants in simple racemes), and its pedicels and calyx being covered with white stellate hairs, the hairs having from 13 to 15 rays.

I do not find that the cordate upper leaves or the paniculately arranged umbel occur in the so-called Irish ivy, so commonly planted in gardens; and the rays of the stellate hairs vary from 5 to 12, so it is probable that this is merely a variety of the common ivy, and not the plant intended by Dr. Seemann under the name of African ivy.

Common Ivy.

French, *Lierre Grimpant.* German, *Gemenier Epheu.*

The origin of the common English name of this plant, Ivy, is fully discussed by Dr. Prior. He considers that the Ivy and the Yew are undoubtedly the same word, and explains the source of confusion thus:—"The chamæpitys of Pliny," as we learn from Parkinson, "was called in English ground pine and ground ivie, after the Latin word *iva*." But this name ground ivy had been assigned to another plant, which was called in Latin *hedera terrestris*, and thus Ivy and hedera came to be regarded as equivalent terms. But there was again another plant that was also called *hedera terrestris*, viz., the creeping form of Hedera Helix; and as Ivy had become the equivalent of *hedera* in the former case, so it did in this too, and eventually was appropriated to the full-grown evergreen shrub so well known. The botanical names of the Yew are so completely confused by older botanists with those of the Ivy, that dissimilar as are the two trees, there can be no doubt that the origin of their names is identical. The first observers of plants were not very accurate in their distinctions, and by a series of errors, either in copying names or wrongly applying them, the Ivy and the Yew both seem to owe their names originally to the Latin word *abiga*, and miswritten by some transcriber as *ajuga*. The specific name *helix* comes from ειλειν (*eilein*), to encompass or turn about, in allusion to the twining habit of the plant. It is almost difficult to write of the Ivy merely in a prosaic spirit, for its beautiful rich-coloured leaves, its graceful form, and clinging twining habit, have in all ages associated it with sentiment and poetry. The Ivy was well known to the Greeks and Romans, and there are many mythological and traditional allusions to it in the writings of Greek and Roman authors. Its Greek names were κισσος (*kissos*) and κιττος (*kittos*), from *Kissus* or *Cissus*, the name of a boy whom Bacchus is said to have changed into it. By the Romans it was called *hedera*, a name adopted by modern botanists. By the ancients the Ivy was dedicated to Bacchus, and his statues are generally found crowned with a wreath of its leaves; and as the favourite plant of the god of wine, its praises have been sung by almost all poets, ancient and modern. Many reasons have been given for the consecration of this plant to Bacchus. Some poets say it was because the Ivy had the power of dissipating the fumes of wine; others, because it was once his favourite boy Cissus; and others, because the Ivy, if allowed to grow in vineyards, is supposed to kill the vines, and it was doing acceptable service to that plant to tear up its enemy and wreath it into

chaplets and garlands. Mr. Loudon tells us, however, that the most probable explanation is, that the vine is found at Nyssa, the reputed birthplace of Bacchus, and in no other part of India. It is related that when Alexander's army, after their conquest of Babylon, arrived at this mountain, and found it covered with laurel and Ivy, they were so transported with joy that they tore up the Ivy by the roots, and twining it round their heads, burst forth into hymns to Bacchus and prayers for their native country. Not only Bacchus, who Pliny tells us was the first who wore a crown, but Silenus also was crowned with Ivy, and the golden-berried kind, before the transformation of Daphne into a laurel, was worn by Apollo, and after him by the poets. Pope does not seem to allow this, for he gives the plant expressly to critics :—

> "Immortal Vida, on whose honoured brow
> The poet's bays and critic's ivy grow."

The priests of the Greeks presented a wreath of Ivy to a newly married pair, as a symbol of the closeness of the tie that ought to bind them together.

Numerous allusions to this plant occur in Homer, Virgil, Horace, Ovid, and many other poets both ancient and modern. Spenser, in his "Virgil's Gnat," enumerates it amongst the ornaments of the woods :—

> "Emongst the rest the clambering Yvie grew,
> Knitting his wanton armes with grasping hold,
> Least that the Poplar happily should rew
> Her brother's strokes, whose boughs she doth enfold
> With her little twigs till they the top survew,
> And paint with pallid green her buds of gold."

Sir Walter Scott calls it "the envious Ivy," while other authors have considered it as sacred to friendship, of the true nature of which it would seem to be symbolical. "Nothing," says St. Pierre, in his "Studies of Nature," "can separate it from the tree which it has once embraced; it clothes it with its own leaves in that inclement season when its dark boughs are covered with hoar frost. The faithful companion of its destiny, it falls when the tree is cut down; death itself does not relax its grasp; and it continues to adorn with its verdure the dry trunk that once supported it." Our own poet, Bernard Barton, embodies the same idea in some beautiful lines :—

> "Hast thou seen in winter's stormiest day
> The trunk of a blighted oak,
> Not dead, but sinking in slow decay
> Beneath time's resistless stroke,
> Round which a luxuriant Ivy had grown,
> And wreathed it with verdure not its own?
>
> "I can draw from this perish'd tree
> Thoughts which are soothing and dear to me,
> That which is closest and longest clings,
> Is alone worth a serious thought!
> Should aught be unlovely which thus can shed
> Grace on the dying and leaves on the dead?"

Many have considered the Ivy as a parasite injuring and even destroying its benefactor, from whom it derives support and nourishment. Shakespeare seems to have been of this opinion, for botanical inquiries had made but little progress in his time, or

he would have known that the little fibres by which the Ivy attaches itself to any object are but suckers, not roots, and that inorganic substances are equally acceptable to it for support as those which have life and vigour. Prospero calls his guilty brother—

> "The Ivy which had hid my princely trunk
> And sucked my verdure out o'ut."

Loudon tells us that under certain circumstances the warmth produced by a covering of Ivy is favourable to vegetation—the only injury which it seems likely to effect is that of compression on a growing tree. When a network of Ivy is formed around the trunk of a tree and extends to the tender branches, they cannot expand, and are sure to be injured. In this case the Ivy should be removed. Various opinions are held as to the desirableness of Ivy as a covering for buildings. Where walls are well built and not containing crevices large enough to admit of the fibrils becoming roots, and of course increasing in size and rupturing the masonry, Ivy must be a protection to the house from the weather and to the interior of the building from cold and heat, though it has the disadvantage of keeping the walls damp. Loudon gives a very decided opinion, that unless the object be to show the architecture of an ivied ruin, its destruction will be accelerated rather than retarded by the removal of the Ivy. As an ornamental plant Ivy is invaluable. It may be trained in every variety of form and adapted to innumerable purposes. In large or small gardens it forms clothing of a perpetual verdure. Trained against espaliers, lattice-work, wire frames, or hurdles, it becomes a beautiful evergreen wall or screen. We seldom see ivy-growing introduced into our rooms in England, but on the Continent it is frequently planted in boxes or vases, and trained round a window or over a wire screen. Sometimes it is grown on espaliers parasol-shaped, and thus forms a sort of rustic canopy for groups who like to sit under the shade.

In small suburban gardens, Ivy attracts birds in the early spring by its berries, and affords shelter for their nests. Ivy grows very quickly, a circumstance which may be turned to great advantage in towns. Rooted plants of Irish Ivy placed in good soil at the base of a wall 10 feet high, will reach its top in three years, and those of the common Ivy in five years; but after it has attained 15 or 20 feet, its growth is comparatively slow. Although we now constantly introduce Ivy into our evergreen church decorations at Christmas, there was an old prejudice against it, which is alluded to in some of the old carols. We have already quoted one when writing of the Holly, in which the Holly is praised to the disparagement of the Ivy, which is said to be "alway sorrowing," and is told to "stand without the door, being full sore a-cold."

Many virtues were attributed by our forefathers to Ivy. Its fruit was regarded as a specific for the plague and similar disorders, for which it was infused in vinegar. The whole plant is aromatic, and a very fragrant resin exudes from the old stems when bruised, from which is obtained the chemical principle hederine. Ivy was at one time included in the British Materia Medica, as it was in that of the Greeks, and still is in that of India. The berries are emetic and purgative, and the resin, which is still used in India, is aperient and restorative. It has been used for toothache with success. The leaves have a very unpleasant taste; taken inwardly they act as aperient and emetic, but are likewise soporific. In Germany, according to Haller, they are given to children when suffering from atrophy. The juice is said to cure headache when applied to the nostrils. A decoction of the leaves has been used for dyeing black. The wood when it attains a sufficient size is employed by

turners in the south of Europe; but it is seldom used here for any purpose but that of whetting the knives of leather-cutters. It is very porous. The ancients supposed that it had the property of separating wine from water by filtration, an error arising from the wood absorbing the colour of the liquid in its passage through the pores. On the Continent at the present time it is sometimes used in thin slices as a filter. The Ivy is sometimes eaten by sheep and horses, but it is not a favourite food. In the "Winter's Tale" we read of the shepherd who found Perdita, being led to the sea-side in the hope of finding two of his sheep which had strayed "browsing on ivy." After all, the charm of the Ivy consists in its unrivalled pertinacity of growth, its rich colour, and its associations with much that is interesting in history. From the days of Pliny it has formed a favourite embellishment of dwelling-houses. In a letter to Apollinaris, the consul, describing his principal seat in Tuscany, represents the trunks of his plum-trees to be entwined with it, and extending so as to connect them together. Hasselquist says, that about Smyrna it forms hedges and ornaments to every garden. These classical associations may add somewhat to the interest with which we regard our old ivy-grown buildings, but they cannot add to the delight which every lover of nature must feel in contemplating the picturesque beauty with which it clothes every object to which it attaches itself, be it a rugged cliff, a ruined wall, or the dying trunk of an old tree of the forest.

ORDER XXXV.—CORNACEÆ.

Trees or shrubs, rarely herbs, with opposite (very rarely alternate), usually entire, pinnately veined exstipulate leaves. Inflorescence a corymbose cyme or an umbellate head, in the latter case surrounded by a corolla-like involucre. Flowers perfect, regular, generally white, more rarely yellow, maroon, or greenish. Calyx adnate to the ovary, with 4, more rarely 5, small teeth, or as many lobes with valvate æstivation. Corolla of as many distinct petals as there are teeth in the calyx, inserted into the margin of the epigynous disk, with valvate æstivation. Stamens as many as the petals, and inserted with them; anthers introrse. Ovary 1- or 2-celled, with a solitary pendulous ovule in each cell; style single. Fruit a fleshy or juicy drupe, with a 1- or 2-celled stone. Seeds anatropous; albumen fleshy; embryo nearly as long as the albumen.

GENUS I.—CORNUS. *Linn.*

Calyx-tube adhering to the ovary, limb of 4 teeth. Stamens 4. Style 1. Fruit a drupe containing a stone with 2, rarely 3 cells. Seeds solitary in each cell, pendulous.

Trees, shrubs, rarely herbs. Leaves opposite, except in one

species, entire. Flowers white or cream-colour, in corymbose cymes or panicles without involucres, or dark-purple or greenish-white or yellow in heads or umbels surrounded by an involucre which is generally petaloid.

The name of this genus of plants comes from *cornu*, a horn; because its branches are like horns, from their hardness and rigidity.

SPECIES I.—CORNUS SUECICA. *Linn.*

PLATE DCXXXIV.

Rhizome creeping, woody, sending up simple or slightly-branched herbaceous stems, with 3 to 8 pair of sessile oval 5- to 7-ribbed opposite leaves, pointed at both ends. Flowers in umbels, inclosed in an involucre of 4 oval or roundish-rhomboidal white petaloid leaves, longer than the dark-purple flowers.

On moors and pastures in Alpine districts. In the Hole of Horkum and Crossclifle Banks, or near Hackness, Yorkshire; on the Cheviots, and not unfrequent in the Scotch Highlands.

England, Scotland. Perennial. Summer.

Rootstock woody, buried, branched. Stems erect, 2 to 9 inches high, with several pairs of scales at the base, succeeded by pairs of leaves increasing in size upwards, the largest ½ to 1¼ inch long. Umbel stalked, terminal, not unfrequently with a pair of opposite branches from the axles of the upper leaves overtopping the umbel, and barren. Involucre ½ to 1 inch across. Bracts deciduous. Pedicels longer than the calyx-tube when in flower, but shorter than the mature fruit. Calyx-segments triangular. Petals oblong-oblanceolate. Drupes red, about the size of swan-shot. Plant pale-green, finely downy, with distant adpressed hairs on the stem-leaves, pedicels, and calyces. Leaves glaucous beneath.

Dwarf Cornel.

French, *Cornouiller.* German, *Schwedische Cornelle.*

The berries of this pretty little plant are eaten by the Highlanders to improve appetite, and hence are called *Lus à chravis*, or Plant of Gluttony. In the Arctic regions bears fatten on these berries; whence they are called by the Crees *Musqua muna.*

SPECIES II.—CORNUS SANGUINEA. *Linn.*

PLATE DCXXXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 244.

Stem woody, much branched. Leaves shortly stalked, oval or ovate-oval, acute or sub-cuspidate, with a strong midrib, and 3 or 4 pairs of lateral veins springing all from the basal half of the leaf.

Flowers white, in compact compound corymbose cymes, without an involucre.

In woods, thickets, and hedges. Common in the South and East of England, more rare in the North and West. Not wild in Scotland.

England, [Scotland,] Ireland. Shrub. Summer.

A shrub 4 to 8 feet high or more, much branched, with grey bark; the young shoots smooth, bright-red in autumn and winter. Leaves 1½ to 3 inches long, with very short distant adpressed hairs above, attached by the middle and longer curled ones beneath. The growing shoots silky, pubescent; cymes compact, much branched, flattish above, many-flowered, 1 to 2 inches across. Flowers ⅔ inch across, cream-white. Calyx-segments very minute, triangular. Petals strapshaped, slightly recurved at the tips. Stamens as long as the petals, sub-erect. Style about as long as the stamens, enlarged at the apex. Drupe about the size of buck-shot, black, clothed with minute hairs attached by the middle. Leaves dull-green, turning purple in autumn.

Common Dogwood.

French, *Cornouiller Sanguin.* German, *Rothe Cornelle*, or *Hartriegel.*

This shrub has a variety of names given to it. It is called Female Cornel, Dogberry-tree, Hound-tree, and Prickwood. The latter name seems to have originated in the use of the wood for making skewers in former times. It is one of the commonest shrubs in old plantations, and may be easily distinguished from other kinds of Cornus by the abundance of its dark-purple fruit, and the intensely dark-red of its leaves before they drop off in the autumn. It is from this latter circumstance that the specific name *sanguinea* has been given to it, although the red shoots of *C. alba* would more fully justify the name. The British Dogwood, although possessed of some of the properties of its foreign representatives, has not been so extensively applied to useful purposes; it is, however, valuable to some extent on account of the hardness of its wood, which is made into cog-wheels, skewers, &c., at the present time; and when bows and arrows were the national arms of defence, arrows were very generally made from this wood. Ramrods of fowling-pieces are often made of Dogwood, especially in France, and in Germany and Russia it is bored and used as tubes to pipes. It makes excellent fuel, and the very best charcoal for gunpowder. The fruit contains a large quantity of excellent oil adapted for most domestic purposes, especially for burning in lamps: the quantity yielded amounts to about 34 per cent. In France, much of this oil is expressed from the berries by a similar process to that by which olive-oil is extracted: it is largely consumed there in soap-making. It will grow in any soil, but prefers that of a calcareous nature; and, as the fruit is produced in abundance, it has been suggested that the shrub might be grown here with advantage, for the purpose of procuring the oil. The Cornel-tree known to the ancients, and forming the celebrated

"Cornel spear
Ulysses waved to rouse the savage boar,"

was probably a much larger species—the Male Dogwood, or *Cornus mas.* This tree is

often referred to by classical writers, and is interesting as being so nearly related to our own Cornel or Dogwood. Homer mentions it as one of the trees that bear the coarsest fruit, and represents Circe as throwing it with acorns and beech-mast to the companions of Ulysses after she had transformed them into swine. It is frequently and advantageously cultivated in shrubberies in England. Gerarde, in 1597, says : "There be sundrie trees of the cornel in the gardens of such as love rare and dainty plants, whereof I have a tree or two in my garden." This tree was dedicated to Apollo, and has many curious legends attached to it, which, however, do not concern our present species. Parkinson tells us that the name Dogberry was given to the plant on account of the bitter disagreeable taste of its berries, "which are not fit even for dogs."

Sub-Class IV.—MONOPETALÆ.

Calyx free, or more or less adhering to the ovary. Sepals generally more or less united, at least at the base. Petals in one whorl, unlike the sepals, inserted on the calyx when this adheres to the ovary, or on the torus, united into a monopetalous corolla, rarely separate, sometimes absent. Stamens definite, inserted on the calyx (epigynous) when the ovary is inferior, or on the corolla (epipetalous) when the ovary is superior, rarely on the torus (hypogynous). Ovary superior or inferior.

ORDER XXXVI.—LORANTHACEÆ.*

Evergreen shrubs, parasitic on the branches of trees, with very few exceptions. Branches dichotomous, generally articulated at the nodes, spreading in all directions. Leaves opposite, rarely verticillate or alternate, more or less fleshy, entire, exstipulate, sometimes obsolete. Flowers variously disposed, perfect and brightly coloured, or unisexual and whitish or yellowish-green. Calyx-tube bracteolate, adhering to the ovary; limb obsolete, or appearing as an entire or toothed ring at the summit of the ovary. Corolla of 4 to 8 petals, sometimes free, but usually more or less united into a monopetalous corolla, rarely absent, valvate in æstivation. Stamens adhering to the base of the petals or lobes of the corolla, and opposite to them. Ovary inferior, generally crowned by an annular disk, 1-celled; style simple, sometimes wanting; stigma capitate. Fruit a 1-seeded berry. Seed solitary; albumen fleshy; embryos often more than 1 in each seed.

* The real affinity of Loranthaceæ seems to be with the apetalous order Santalaceæ.

GENUS I.—VISCUM. *Linn.*

Flowers unisexual, diœcious. Male flowers: calyx obsolete; corolla of 4 fleshy petals united at the base; anthers 4, adnate to the petals, opening by numerous pores; ovary rudimentary or none. Female flowers: calyx-tube adnate to the ovary; calyx-limb obsolete; petals 4, inserted on the summit of the calyx; stamens absent; ovary inferior; stigma sessile. Berry pulpy, 1-seeded.

Parasitical shrubs, growing on the branches of trees.

The name of this genus of plants comes from the Greek word *βισκος* (*biskos*), tenacious, from the adhesive properties of the berries of the species.

SPECIES I.—VISCUM ALBUM. *Linn.*

PLATE DCXXXV*.

Billot, Fl. Gall. et Germ. Exsicc. No. 566.

Stem repeatedly dichotomous, terete. Leaves opposite, oblanceolate, coriaceous-fleshy, without evident nerves. Flowers in clusters of about 3 together in the upper forks of the branches and axils of the leaves.

Parasitic on the branches of various trees, — especially on apple, poplar, hawthorn, lime, and maple.

Not uncommon in the South and West of England, rare in the North; not native in Scotland.

England, [Scotland.] Shrub. Spring.

A glabrous evergreen shrub, much branched, the branches round, regularly dichotomous, enlarged and readily breaking at the nodes, with thick leathery dim-green bark. Leaves oblong-oblanceolate or -obovate, rounded at the apex, very thick, at first yellow-green, but turning dark-green when mature, when they are $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, opposite (rarely in whorls of 3), sessile, with a horseshoe-shaped elevation at the base on the upper surface, with about 5 very indistinct ribs, sprinkled with very minute glandular dots. Flowers greenish, usually 3 together, in sessile clusters in the terminal forks of the branches and axils of the leaves, seated on a 4-sided short dilated peduncle, larger below the female than below the male flowers; each flower with 2 fleshy bracts at the base. Berry about the size of a pea, white, with viscid pulp and a green compressed seed. Female plant more luxuriant than the male.

Interesting accounts of the parasitism of the Mistletoe will be found in a paper by Dr. Harley, in Trans. Linn. Soc., Vol. XXIV.

p. 175. See also Mr. H. Bull's paper in Journ. of Bot., 1864, p. 361, and Trans. Woolhope Nat. Field Club, No. 5, p. 59.

Common Mistletoe.

French, *Gui Blanc.* German, *Weisser Mistel.*

Dr. Prior gives us the etymology of the common name of this well-known plant thus :—"*Mistiltau*, from *mistl*, different, and *tau*, twig, being so unlike the tree upon which it grows." Other derivations have been given, such as the fact of the berries forming the favourite food of the *mistle thrush*. Others fancifully trace its origin to a corruption of the Latin word *viscum ;* but the name occurs in all the northern Teutonic languages, and in its original form *Mistiltein*, the Icelandic word, appears to signify simply a slender twig, alluding to the weakness and flexibility of the green stems. The word occurs in the "Voluspa," in the account of the death of Balder. Balder having dreamed that he should die, his mother Frigga exacted oaths from fire, water, iron, trees, and all existing things that she could think of, that they would not harm him. When this was done, the Asen rejoiced themselves in throwing all manner of weapons at him ; but nothing would hurt him. Loke being enraged, took the form of an old woman, and asked Frigga if all things had sworn not to injure Balder. She replied, "There is a slender one called Mistiltein, growing far to the west of Valhalla, which seemed too young and feeble to demand an oath from." Then Loke resumed his shape, and plucking up the shrub, returned with it to the hall of the Asen. There he saw the blind Hoder standing apart without partaking of the sport, and Loke asked him why he did not cast anything at Balder ? He replied that he was blind and weaponless. Loke said, "Come, do like the rest, pay honour to Balder, and throw this little thing at him." Then Hoder took the Mistiltein, and Loke guiding his hand, hurled it at Balder, who fell pierced through to the earth. In every point of view the Mistletoe is a most interesting plant, whether we regard its history, associations, or its manner of propagation and growth. Each one of these particulars has given rise to long and learned discussions, and probably all that has to be known is not yet arrived at. We can but give the results of the most recent investigations made by naturalists, and leave it for others to make further discoveries.

The mode in which the Mistletoe establishes itself in the tissue of other plants is very remarkable, and has been well described by De Candolle in his excellent "Physiologie Végétale." Old botanists believed that birds feeding upon the berries, and getting their beaks surrounded with the viscous matter they contain, rubbed their beaks against the branches to get rid of it, and thus introduced the seeds to their resting-place. Paley, in his "Natural Theology," gives at great length his views of the subject, and says :—"Of no other plant can it be said that the roots refuse to shoot in the ground, and no other is known to possess this adhesive generative quality when rubbed on the branches of trees."

Careful botanists who have examined the process of growth in these plants from their earliest stage, tell us that from whatever cause the seeds are brought in contact with the wood of the tree on which they establish themselves, they adhere by means of the glutinous substance in which they have been embedded, and which hardens into a sort of transparent glue. Then two or three days after application the tiny radicle may be seen pushing towards the support, whether it be on the under or upper surface ; reaching this point, it becomes enlarged and flattened. It now has the appearance of a sucker, and by degrees penetrates the bark. This operation requires some

time, and is not completed until the plumule begins to be developed. By the time the young plant has a pair or two of leaves, the attachment will be found tolerably firm.

Mr. Griffiths, who has written a paper on the genera *Loranthus* and *Viscum*, in the Transactions of the Linnæan Society, tells us that on cutting away a portion of the branch on which the Mistletoe had fixed itself and laying bare the included portion of the parasite, he found that the union had taken place entirely between the ligneous systems of both ; the fibres of the sucker-like root of the parasite expanding on the wood of the support in the form of a web foot. There was, however, no interchange of structure between them, neither at this period was there any intermixture of ligneous fibres. As the parasite increases in size, and an additional supply of nutriment is required, lateral shoots are sent out from the surface, which also penetrate the bark and are precisely similar in mode of attachment to the original seedling shoot. It is a curious fact that the fibres of the later shoots never penetrate further than those of their primitive attachment. In the adult plants the sucker-bearing shoots frequently run to a considerable distance ; many of the stocks being literally covered with parasites, all of which have sprung from one seed. Mr. Griffiths says :—"I have seen such shoots, which had taken their course along a decayed branch, become reflexed and return in quest, as I may express it, of a part capable of affording nourishment."

The remarkable exception which the *Viscum* presents to the general law—that the radicle or root of the embryo shoots downwards and the plumule upwards, under all circumstances, has been confirmed by curious experiments. So certain is it that the radicle of the Mistletoe will turn itself towards the body to which it is attached, whatever may be the position of that body with respect to the earth, that a cannon-ball, to which Mistletoe seeds were glued on all sides, and suspended in the air, became the point of attraction for all the little radicles to direct themselves towards from all sides of the ball. This property insures their growing upon the branches of trees, to whatever side they may happen to adhere. It is asserted that a branch of Mistletoe, if placed in water, has no power of absorbing this fluid itself ; but that when the branch to which it is attached is immersed, then the water is readily absorbed and penetrates into the Mistletoe. The following experiment was performed by De Candolle. He immersed the branch of an apple-tree bearing Mistletoe in water previously coloured red with cochineal, which, penetrating the wood and inner bark of the apple-tree, entered into the Mistletoe, when its colour was even more intense than in the former. It would appear as if these parasitic plants had an elective power, for it is certain that they do not attach themselves to all trees or shrubs indiscriminately. Mr. Griffiths thinks, however, that they would grow on almost any plant whose duration is sufficiently long to allow them to establish themselves. Plants with milky juice seem to be an exception. The seeds of *Loranthus* have been seen to germinate on a frond of *Polypodium*. The influence these parasites have on the stock is according to their respective proportions. If they attack a small or weakly tree, they injure it, and perhaps kill it ; but when they attack large vigorous trees, no ill results seem to follow.

The Mistletoe is the only green parasite in this country, and often forms a conspicuous feature in the physiognomy of vegetation on the leafless trees of winter.

In an interesting paper by Dr. Bull on the Mistletoe in Herefordshire, published in the "Journal of Botany" (No. 24), we have a list of the trees on which the Mistletoe flourishes. As his observations have been very carefully made, we may be allowed to quote them here.

"The trees upon which the Mistletoe grows, as far as I have ascertained, are as follows :—Apple-tree (*Pyrus Malus domestica*) ; throughout the county. Abele-tree

or White Poplar (*Populus alba*); not common. Grey Poplar (*P. canescens*); rare. Aspen (*P. tremula*); occasionally. Black Poplar (*P. nigra*); rare. Black Italian Poplar (*P. monilifera*); very freely. Canadian Poplar (*P. Canadensis*); very common. Ontario Poplar (*P. candicans*); common. Pear-tree (*Pyrus communis*). Oak (*Quercus Robur*). Alder (*Alnus glutinosa*). Round-leaved Sallow (*Salix caprea*). Hawthorn (*Cratægus oxyacantha*); not uncommon. Crab (*Pyrus Malus*); general throughout the county. Lime-tree (*Tilia Europæa*). Maple (*Acer campestre*). White-flowering Acacia (*Robinia Pseudacacia*). Mountain Ash (*Pyrus Aucuparia*). Ash (*Fraxinus excelsior*). Common White Willow (*Salix alba*). Hazel (*Corylus Avellana*). Sycamore (*Acer Pseudo-platanus*). Common Dog-rose (*Rosa canina*). Medlar (*Mespilus Germanica*). Wych Elm (*Ulmus montana*).

"The Mistletoe also grows spontaneously on the following cultivated trees in this county:—Yellow Horse-chestnut (*Æsculus flava*). Horse-chestnut (*Æ. Hippocastanum*). Western Plane (*Platanus occidentalis*). Eastern Plane (*P. orientalis*). American Crab (*Pyrus Malus Americana*). Red Swamp Maple (*Acer rubrum*). Upright Wych Elm (*Ulmus montana erecta*)."

The favourite site of the Mistletoe is the apple-tree. In orchards examined, consisting of comparatively new kinds of fruits, principally French and Italian apples, the average number of trees which bear Mistletoe range from 13 to about 30 per cent.; in old, long-established orchards, the proportion varies from 30 to as high as 90 per cent.; whilst the general average from all the trees is 39 per cent. of Mistletoe-bearing trees.

Next to the apple-tree, the Mistletoe likes best the poplars, in particular the Black Italian, Canadian, and Ontario. Here its luxuriant branches thrust themselves into notice, as well by their contrast to the tree itself, as by their lofty situation. These trees are now much planted, and no sooner do they attain any size, than a number of them become inhabited by the Mistletoe.

Why the Mistletoe should attach itself to certain trees in preference to others, is not yet solved. Popular opinion refers it to some peculiarity in the bark, and seems, oddly enough, pretty equally divided as to whether the *Viscum* prefers a smooth and hard bark, or one that is rough and porous.

Mr. Buckman gives the following table of the comparative frequency with which trees are prone to bear Mistletoe:—The various kinds of apple, 25; poplar, mostly black, 20; whitethorn, 10; lime, 4; maple, 3; willow, 2; oak, 1; sycamore, 1; acacia, 1.—(*Notes and Queries*, iii. 226.) In Herefordshire, according to Dr. Bull, the proportion for the apple-tree must certainly be raised considerably, and the acacia be put higher on the list.

The *Viscum album* but rarely "gains a settlement" on the oak; as seldom in our own day as in the Druidical times of old, when its very rarity heightened the veneration with which it was regarded when found. "Est autem id rarum admodum inventum, et repertum magna religione petitur," says Pliny. In an excellent note by Dr. Giles, in his translation of "Richard of Cirencester" (p. 432), he gives the opinion of Dr. Daubeny, that Mistletoe-growing oaks were exterminated after the Druids were destroyed.—(*Notes and Queries*, vol. ii.) It is highly probable that this was the case; but since all their oaks, too, have gone centuries since, it can make no difference as to its occurrence at the present time. Whatever may be the conditions necessary for the germination and growth of the Mistletoe on the oak, they must be such as rarely coincide, or it certainly would be much more common in this county. The oak may be considered the weed of Herefordshire. Oak-timber and oak-bark form two of our

chief exports. Oak-woods and oak-trees border Mistletoe-abounding orchards very generally, and the trees themselves are often mingled in very close alliance; indeed, it would not be too much to say, from the great abundance of oaks in the vicinity of orchards, that the birds must sow the Mistletoe seeds upon them more frequently than upon any other kind of tree. Nevertheless, so far as is known, there are but two instances of its growth on the oak in Herefordshire,—the one in Eastnor Park, which has been so well known for so many years, and the other in an outlying district of the county at Tedstone Delamere, discovered in 1851.

Dr. Bull has carefully collected and authenticated all the known instances of the Mistletoe growing upon the oak. Besides those he mentions in Herefordshire, he gives us an oak at Badam's Court, Ledbury Park, near Chepstow; one at Burningfold Farm, in Surrey; another near Basingstoke; and one at Plymouth,—in all only seven instances of the Mistletoe living upon the oak in England.

"The Mistletoe on the oak," writes an energetic searcher for it in Monmouthshire, "is like a ghost, it vanishes into thin air when you try to grasp it; everybody has seen it long ago, but the tree is always cut down, or, somehow or other, the result is—*nil*." Most woodwards will tell you, and in good faith too, that they have seen it, and, indeed, will generally mention the exact tree and the place where it grows, but the result of their further examination has always been the same,—for some cause or other the instance fails, and the Mistletoe can never be shown on the oak. The tree has been felled or blown down, or it may be the isolated bunch of wild ivy or honeysuckle, or a cluster of small oak branches, has deceived them.

The simple fact of the extreme rarity of oak-fed Mistletoe appears to have given its sanctity in the early days of superstition and darkness. On a tree famous from all antiquity and consecrated in the earliest ages—the very name of the priests of religion signifying a connection with oaks and oak-woods, it does not seem unnatural that the tiny plant deriving its life from this venerated tree and growing in a manner almost supernatural, when compared with surrounding vegetation, should have become invested with a mysterious sanctity.

Pliny writes of our British ancestors:—"The Druids (thus they call their chief priests) hold nothing in greater veneration than the Mistletoe and the tree on which it grows, provided only that it be the oak. They select groves of oak-trees standing by themselves, and perform no sacred ceremonies without green oak-foliage. Indeed, they truly believe that whenever the Mistletoe grows upon the oak it has been sent from heaven, and they consider it a sign of a chosen tree. But the Mistletoe is very rarely found upon the oak. When it is discovered they proceed to collect it with very great devotion and ceremony, and especially on the sixth day of the moon. This period of the moon's age, when it has sufficient size without having attained the half of its fulness, makes the beginning of their months and years, and of an age, which consists but of thirty years."—*C. Plinii Nat. Hist.* lib. xvi. c. 44.

The grand ceremony of cutting the Mistletoe from the oak was the New Year's Day festival of the ancient Britons, and it was held on the sixth day of the moon, as near the 10th of March as the age of the moon permitted. The New Year's Day festival of our forefathers would have fallen this present year on the 14th of March. The exact proceedings of the Druids on this great annual festival are thus described by Pliny:—"Calling the Mistletoe, in their manner of speaking, a cure-all (or all-heal), and having got the sacrifices and the good things for the feast all properly ready under the tree, they lead up two white bulls, and begin by tying them by their horns to the tree. The Arch-Druid clothed in a white robe, then mounts the tree and cuts the Mistletoe

with a golden sickle. It is caught, as it falls, in a white cloth. Then they offer up the victims as a sacrifice, praying that God would make his gift prosperous to those to whom it had been presented. They believed it would give fruitfulness to all barren animals, and would act as a remedy against all poisons." The animals were killed, cut up, and cooked; meantime prayers were offered up, hymns were sung, and the heaven-born plant, thus carefully saved from pollution by any touch of the earth, was distributed in small sprigs amongst the people, as a sacred relic for the new year, a charm to insure fecundity, a panacea against every disease, a remedy for poisons, and a safe protection against witchcraft and the possession of the devil. Many a good-wife travelled for days, perchance, on a pillion behind her husband, through bogs and fords, and over wide tracts of uncultivated land and primeval forest, to attend this festival, leading a sumpter-horse laden with their offerings to the priesthood and all the good things they could muster for the festival,—venison and salmon, roasted bustards and boars' hams, with cakes and other delicacies, not forgetting some well-filled skins of metheglin or mead,—happy in being able, as a recompense for so much toil, to procure from the hand of the Arch-Druid, for herself and her husband, so many blessings in the coming year. The memory of the Druidical ceremonies is still kept up in Normandy, as they give Mistletoe to each other on New Year's Day, by saying, "Au gui l'an neuf," and in Picardy they add the word "plantez," to wish a plentiful and prosperous new year to each other.

The medical reputation of the Mistletoe does not seem to have disappeared with the Druids; for, although some of the ancients looked upon the Mistletoe as poisonous, the old herbalist Gerarde, in 1636, gives his opinion as quite the reverse, and says—"A few berries of the mistletoe, bruised and strained into oile and drunken, hath presently and forthwith rid a grievous and sore stitch." He also quotes Galen, who says—"His acrimony overcometh his bitterness, for if it be used in outward applications, it draweth humours from the deepest and most secret parts of the body, spreading and dispersing them abroad and digesting them." We are inclined to think that the imagination of the patient had more to do with the efficacy of the mistletoe plasters, as it has with many modern and still favourite remedies, than any virtue in itself. The only practical use to which we now apply the berries of the Mistletoe is in the manufacture of birdlime.

In Prussia, in times of scarcity, the branches and leaves of the Mistletoe have been used, powdered and mixed with rye flour, to make bread, which is by no means unwholesome. In this county, before turnips were so abundantly grown, the plant used regularly to be given to sheep in frosty or snowy weather.

> "If snowe do continue, sheepe hardly that fare
> Crave mistle and ivie for them for to spare."—Tusser's *Husbandry*.

There can be no question, however, that the chief virtue ascribed to Mistletoe from the oak by the Druids was the "fructifying quality," as Taliesin has it, or of "giving fertility to all animals" as described by Pliny; and it was for this virtue, when worn as an amulet, or when drunk in infusion, that the sprig of Mistletoe was so anxiously sought from the hands of the Arch-Druid on the New Year's Day festival. It is always necessary to remember this in endeavouring to trace down the domestic history of the Mistletoe in succeeding ages. It explains fully the personal hold it had gained in the esteem of the people, and its continued private use in spite of all opposition. Though books ceased to mention it, tradition would perpetuate its use, even to our own day. This peculiar virtue may perhaps serve to explain some points with

regard to it, which have not been otherwise satisfactorily accounted for. "In one of Colepeper's MSS. at the British Museum, in a curious notice of Sir Peter Freschville's house at Stavely, Derbyshire, is this passage :—'Heare my Lord Freschville did live, and heare grows the famous Mistletoe-tree, the only Oake in England that bears Mistletoe.'" And to this tree the following letter, written between 1663 and 1682, from the Countess of Danby to Mrs. Colepeper, probably refers :—

"Dear Cozen,—Pray if you have any of the Mistleto of yo^r^ fathers oke, oblige me so far as to send sum of it to yo^r^ most affectionat servant, Bridget Danby."—(*Notes and Queries*, vi. 119, 1st ser.) Let us hope that the countess's desires were fulfilled in all respects.

The Romans dedicated the Mistletoe to Saturn, whose festival was held in December ; and the early Christians, to screen themselves from persecution, decked their houses with its branches during their own celebration of the Nativity. It may be, however, that the fact of the Mistletoe being the especial emblem of the New Year's Day festivities, has prevented its use for Christmas decoration ; or it may be also, I must add, that this favourite parasite has taken too prominent a place in the rejoicings of the kitchen to secure for itself a place in the church.

The fact that it is bright and green when all nature is wrapped in her winter mantle may account for its constant association with Christmas festivities and decorations in modern times. Then it has the attraction of association with bygone ages. Christmas itself is not now what it used to be in the days of the old Tudors, who, with their maskings and revellings, seem to us somewhat coarse in their boisterous merriment. With our increasing refinement we have lost perhaps some of the spirit of the season, and we believe almost the only relic of the ancient license of the occasion lingers still in some remote country-houses, and in the servants' halls of the present time. John still thinks himself at liberty to kiss Mary under the Mistletoe, and the overhanging shadow of the mysterious plant hides Mary's blushes. The superstition connected with the Mistletoe is in its character something like that which surrounds the four-leaved shamrock. St. Patrick's touch sanctified the one, and the association of the other with our country's earliest priests—the Druids—has hallowed its history. For a time, indeed, it seems to have been used in decking the church, and the fact is referred to by the poet Gay (*Trivia*, book ii. p. 437) ; but that custom seems to have been a singular one, for in ecclesiastical sculpture and carving the Mistletoe scarcely ever appears.

A writer in the *Quarterly Review* says :—"It seems something like caprice, which has excluded the Mistletoe as well from the decorations of our churches at present as from their ancient sculpture and carvings. We know of one instance only of its occurrence. Sprays of Mistletoe, with leaf and berry, fill the spandrils of one of the very remarkable tombs in Bristol Cathedral, which were probably designed by some artist-monk in the household of the Berkeleys, whose ample and broad lands are among the chief glories of the west country, in which the Mistletoe is now for the most part found. We do not remember to have seen it elsewhere, even lurking among quaint devices of 'Miserere ;' whilst the oak, every portion of which, in the days of Celtic heathenism, was almost as sacred as the Mistletoe which grew on it, was one of the principal trees 'studied' by mediæval sculptors, when, during the so-called 'decorated' period, they reproduced leaf and flower with such exquisite beauty and fidelity : witness the oak leaves laid into the panels of the Cantalupe shrine at Hereford, or the twisted sprays of oak, clustered with acorns, which form one of the most graceful corbels in the choir of Exeter Cathedral."—*Quarterly Review*, vol. cxiv. p. 220.

Although excluded from ecclesiastical edifices for reasons very difficult to discover, the Mistletoe still holds its place in the esteem of the people, if not in their veneration, and there is scarcely a house or cottage that has not its bunch of Mistletoe at Christmas time. In some counties the Mistletoe is brought in with the new year, and does not come with the holly to celebrate Christmas festivities. Until the close of the sixteenth century, Mistletoe does not appear to have been considered a Christmas evergreen. "We have Christmas carols in praise of holly and ivy," says Timbs (*Things not Generally Known*, 1st series, p. 159), "of even earlier date than the fifteenth century; but allusion to Mistletoe as a Christmas evergreen can scarcely be found for two centuries later, or before the time of Herrick :—

> "Down with the rosemary, and so,
> Down with the baies and Mistletoe;
> Down with the holly, ivie, all,
> Wherewith ye dressed the Christmas Hall."

Writers on this subject are very strong in protesting against the notion that in olden times the Mistletoe was ever recognized as a Christmas guest. Sir Walter Scott has been quoted as an authority for this belief, but his ignorance of the customs of the Mistletoe-growing counties, it is said, led him into error. His Introduction to the sixth canto of "Marmion" probably has, and will do much to throw discredit on the apparently well-founded assertion that ancient custom secured Mistletoe expressly for the new year.

> "England was merry England, when
> Old Christmas brought his sports again.
> * * * * * *
> The damsel donn'd her kirtle sheen;
> The hall was dress'd with holly green,
> Forth to the wood did merry men go
> To gather in the Mistletoe."

Had a single sprig of Mistletoe grown in the domain of Abbotsford, we may safely say that the two last lines would never have been written.

Mistletoe has now actually become an established export from the counties where it grows; and Dr. Bull gives us, in his interesting paper, an approximate statement of the quantity actually sent out of Herefordshire last December. A total of 89 tons 3 cwt. 3 qrs. was sent off by invoice, besides much that found private channels of conveyance; so that he computes the quantity really to have been about 114 tons of Mistletoe. The price, when delivered at the stations, was from 4s. to 5s. a cwt., according to its condition, and the charge for transit about £1. 10s. a ton; so that the whole expense of delivery may be said to be from £5 to £6. 10s. per ton. This seems to be a very prosaic way of treating the time-honoured Mistletoe, but it is characteristic of the age in which we live; and, as Dr. Bull says, "It is a practical, commercial, unpoetical period, when commonplace railway-trucks carry off romance—in the shape of Mistletoe—at so much per ton! Had good Sir Walter Scott lived in these days, it would never have occurred to him to send his 'merry men' to the 'woods' for it, where, by the way, they would never have found it,—but the Mistletoe none the less would have reached him; and if he had chanced to look over his greengrocer's bill, he would, doubtless, have found some such items as these :—

> "To a bunch of Mistletoe, fine and full of berries £1 0 0
> To pieces of ditto ditto, for decoration..... 0 7 6"

ORDER XXXVII.—CAPRIFOLIACEÆ.

Shrubs or trees, very rarely herbs, with opposite, simple, entire or toothed or more rarely pinnate leaves, usually without stipules. Flowers regular or irregular, in terminal corymbose cymes or heads, more rarely axillary, white, yellow, pink, purple, or greenish. Calyx-tube adhering to the ovary; limb 5- rarely 4-lobed, or entire, sometimes nearly obsolete. Corolla monopetalous, 4- rarely 5-lobed, imbricated in æstivation. Stamens adhering to the bottom of the corolla-tube, as many as its segments, or one less, rarely twice as many. Ovary inferior, 3- rarely 5-celled. Styles 1, or as many as the cells of the ovary, or none; stigmas as many as the cells of the ovary, distinct or combined. Fruit a berry, generally pulpy, rarely dry, with 1 to 5 cells. Seeds 1 or 2 in each cell, rarely numerous, with a hard testa; albumen fleshy; embryo in the centre of the albumen, with the radicle superior.

Sub-Order I.—ADOXEÆ.

Corolla regular, sub-rotate. Stamens 8 or 10. Styles short, 3 to 5, united at the base. Fruit a berry with 4 or 5 cells, each cell containing a single seed; fruit, however, usually 1-seeded by abortion.

A small herb, the position of which in the natural system must be considered doubtful. Rootstock with thick scale, radical leaves ternately decompound. Flowers in a terminal globose head.

GENUS I.—ADOXA. *Linn.*

Calyx fleshy, with the limb 2- or 3-lobed, spreading, acrescent. Corolla rotate, with a flat 4- or 5-partite limb. Stamens 8 or 10, with 1-celled anthers (probably really only 4 or 5, with the filament extremely short and the connective greatly developed, so as to separate the anther-lobes, as in Salvia). Styles 4 or 5, short, free, persistent. Fruit a succulent berry crowned by the acrescent lobes of the calyx, 4- or 5-celled. Seeds 1 in each cell; the fruit, however, is often only 1-seeded by abortion of the other seeds.

This genus contains only a single species, bearing little resemblance to any other plant.

The name of this genus of plants signifies without glory, and comes from *a* privative and δοξα (*doxa*), glory; void of show, from the fact that the flowers are so small and colourless as scarcely to be seen.

SPECIES I.—ADOXA MOSCHATELLINA. *Linn.*

PLATE DCXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXII. Figs. 1, 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 135.

The only known species.

In moist shady places about the roots of trees, and on damp hedge-banks. Rather scarce, but generally distributed as far North as Aberdeenshire.

England, Scotland, Ireland. Perennial. Spring.

Rhizome creeping, with a few thick white scales at the top, from which the radical leaves and flowering-stem are developed. Radical petioles dilated, fleshy at the base, with 2 or 3 white scaly buds in their axils. Radical leaves 1 to 3, biternate, with the leaflets more or less perfectly ternately lobed, each of these lobes again unequally but less deeply lobed; ultimate lobes rather blunt. Stem 2 to 8 inches high, longer than the radical leaves, with a pair of opposite ternate leaves above the middle, each resembling one of the primary divisions of the radical leaves. Flower-heads cubic-globose, $\frac{1}{2}$ to $\frac{1}{4}$ inch in diameter. Flowers pale yellowish-green, 5 in number, the lateral ones pentamerous, the terminal one tetramerous. Corolla $\frac{1}{4}$ inch across, rotate, with roundish segments. Stamens standing in pairs, with single-celled anthers, each pair probably representing a forked stamen. Styles erect, united below. Berry $\frac{1}{5}$ inch in diameter, pale-green, juicy, globose, half-inclosed by the adnate calyx, which becomes fleshy. Plant very fragile, somewhat succulent. Leaves flaccid, green, paler below, shining.

Tuberous Moschatel.

French, *Adoxe Moscatelline.* German, *Gemeines Bisamkraut.*

This plant receives its specific name from a musky odour which it emits. It will grow freely under the shade of trees, and is worth the trouble of seeking to the lover of wild flowers.

SUB-ORDER II.—SAMBUCEÆ.

Corolla regular, rotate or salver- or funnel-shaped. Style none. Stigmas 3, sessile. Stamens 5. Fruit drupaceous, containing 1 to 3 1-seeded stones.

Trees or shrubs, with flowers in corymbose cymes.

GENUS II.—SAMBUCUS. *Linn.*

Calyx-limb obsolete or with 5 very minute teeth. Corolla subrotate, with a short urceolate tube and a broad spreading limb with 5 blunt lobes. Stamens 5. Stigmas 3, distinct. Fruit a small juicy drupe containing 3 small 1-seeded stones.

Trees, shrubs, rarely herbs, with opposite pinnate leaves with few pairs of serrated pointed leaflets. Flowers numerous, white or pink, in flat compound corymbose cymes.

The derivation of the name of this genus of plants is from σαμβυκη (*sambukê*), which in Latin has been changed to *sambuca*, a musical instrument, which is believed to have been made of elder-wood.

SPECIES I.—SAMBUCUS NIGRA. *Linn.*

PLATE DCXXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCXXX. Fig. 1436.
Billot, Fl. Gall. et Germ. Exsicc. No. 137.

Stem woody. Leaves pinnate, glabrous; leaflets very shortly stalked, 2, more rarely 3, 4, or more pairs, oval or elliptical or lanceolate, rarely orbicular, generally acuminate, finely and closely serrate, rarely cut. Stipules none, or reduced to strapshaped appendages. Flowers in a sub-umbellate much-branched stalked corymbose cyme. Corolla rotate. Filaments slender.

Var. α, *genuina.*

Leaflets 5 to 7, oval, elliptical or lanceolate, simply serrate.

Var. β, *laciniata.*

Leaflets 5 to 7, lanceolate, cut.

Var. γ, *rotundifolia.* D. C.

Leaflets 3, orbicular, simply serrate.

In woods, thickets, and hedges. Common, and generally distributed, except in the extreme North of Scotland, where, though it occurs, it has probably been planted. Var. β I have not seen from any station where it could be considered as truly native; it occurs in Ayrshire, Leicestershire, and Yorkshire; var. γ, between St. Laurence and Niton, Isle of Wight (Dr. Blomfield); but I have seen no specimens.

England, Scotland, Ireland. Tree or Shrub. Summer.

A tree, frequently 20 feet high, at other times merely a shrub, with rough, somewhat corky, yellowish-grey bark; the twigs angular, with shining cinereous bark, with numerous lenticels. Leaves glabrous; leaflets 1 to 3 inches long. Cymes flat, on long stalks, 3 to 7 inches across, with about 5 elongated branches springing from the same point, which are again repeatedly dichotomously branched at the apex. Flowers cream-white, ¼ inch across. Corolla 5-cleft; segments suborbicular, with deflexed margins. Stamens spreading; anthers yellow. Berries about the size of buck-shot, black, very juicy. Bark of the shoots of the year green. Leaflets shining, bright-green, paler beneath. Rays of the cyme purple in autumn.

Common Elder.

French, *Sureau Noir.* German, *Schwarzer Holunder.*

The common Elder is a small tree, familiar to every one from its frequent occurrence in hedges and about cottages and farmhouses. Its ample cymes of delicate cream-coloured flowers make a fine show in June, and its purplish-black clusters of berries in September. Sir J. E. Smith says that our uncertain summer is fully established by the time the Elder is in full flower, and entirely gone when its berries are ripe. The berries of the Elder are much valued in country districts, where a kind of wine is made from them, which is highly esteemed as a winter cordial drink: they are also boiled down with sugar into a sort of rob, which has a rustic reputation for colds and sore throats. In olden times there was no plant that had a greater medical reputation than the Elder. The inner bark was employed by the village doctor as a cathartic, and the flowers as a fomentation, or made into ointment. Boerhaave is said to have held the tree in such estimation that he never passed one without taking off his hat in its honour. An oil, obtained by distilling the flowers, is still retained in some Pharmacopœias; and another, called *green oil*, is prepared by boiling the leaves in rape-oil, and is sometimes used as a liniment. The flowers, distilled with water and alcohol, yield a perfumed liquid known as elder-flower water, and is in requisition for the toilet and in confectionery. London tells us that the ancients used the fruit of the Elder, in common with that of the mulberry, to stain the statue of Jupiter red, on the celebration of the *fête* of that god. They also employed the berries to dye the hair of their heads black. The wood of the Elder, when it becomes old, is very hard and close-grained, and susceptible of a high polish; but the interior of the stem is filled with pith. The shoots are applied to various purposes on account of this circumstance, the pith being easily removed, leaving a hollow tube. From time immemorial children have made popguns, whistles, and miniature muskets of these elder-branches, Pliny himself taking notice of the fact. This pith, being exceedingly light, is cut into balls, which are used for delicate toys and electrical experiments. If a twig of Elder be partially cut, then cautiously broken, and the divided portions carefully drawn asunder, the spiral vessels will be very apparent, and their structure easily studied.

In Kent there are fields or orchards entirely of Elder-trees, which are cultivated for the sake of their fruit, which is brought regularly to market and sold for the purpose of making wine: the price is from 4*s.* to 6*s.* a bushel. These berries are said not only to be used for legitimately making British wine, but to a great extent in the adulteration of foreign wines, especially port; and we have heard of the confessions of

an innkeeper in a university town, who revealed, on his retirement from business, that elder wine, judiciously flavoured with vinegar, sugar, and small quantities of port, constituted his famous clarets and Bourdeaux, so much admired and so highly paid for by the undergraduates.

There was formerly a notion among gardeners that the scent of the Elder was distasteful to insects, which led to the planting of large numbers of trees around the market-gardens about London; but this notion seems unfounded, for moths, at least, are particularly fond of the flowers, a fact well known to entomologists.

SPECIES II.—SAMBUCUS EBULUS.

PLATE DCXXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCXXIX. Fig. 1434.
Billot, Fl. Gall. et Germ. Exsicc. No. 136.

Herbaceous. Leaves pinnate, glabrous; leaflets in 4 to 6 pairs, shortly stalked, narrowly oblong-lanceolate, very finely and closely serrate. Stipules foliaceous, resembling small leaves with one or more pairs of stalked ovate or lanceolate-serrate leaflets. Flowers in a sub-sessile or shortly-stalked compact compound corymbose cyme. Corolla funnelshaped-rotate. Filaments much dilated, crimped.

In woods, waste grounds, especially near ruins, by roadsides, &c. Rather rare and sporadic, but extending from Devon and Kent to Ross and Forfar, though in many places it has probably been introduced.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Root very extensively creeping. Stems thick, resembling the shoots of the year of S. nigra, but dying down in winter. Leaflets 3 to 6 inches long, with the sides much more parallel than in S. nigra, and the serratures more convex on the outside. The cyme is smaller, 2 to 4 inches across, less spreading, with the main branches not all from one point, nor simple for a considerable length and then forked, as in the common Elder. Corolla-limb more concave, tipped with red. Anthers purple. Fruit resembling that of S. nigra, but often abortive.

Danewort, or Dwarf-Elder.

French, *Sureau Yèble.* German, *Zwerg Holunder.*

The common name of this shrub is sometimes given Dane's-blood, and is said to have originated at a time when the Danes were not on their present friendly terms with our own nation, and that an expression of hatred was conveyed in the supposition that this noxious fœtid plant sprang from their blood.

Dr. Prior tells us, that at Slaughtonford, a village near Chippenham, in Wilts, there is an abundance of this plant, and that there was at one time a great fight with the Danes in this place, which made the inhabitants so name it. Every part of this

plant is cathartic and emetic. The inner part has been recommended as a diuretic, but is too powerful for safe administration. The leaves boiled in wine are applied in France to tumours and bruises. Haller used an oil expressed from the seeds for affections of the joints. The berries yield a violet dye. The foliage is not eaten by cattle, nor will moles come where the leaves are laid. They are said to drive away mice from granaries, and the Silesians strew them where their pigs lie, under the idea that they prevent disease. The plant is sufficiently active to be poisonous in large quantities, and should not be administered by ignorant persons.

GENUS III.—VIBURNUM. *Linn.*

Calyx-limb of 5 small teeth. Corolla with a short campanulate or cylindrical tube and 5 spreading blunt lobes, or rotate. Stamens 5. Stigmas 3, distinct or combined into one. Fruit a juicy drupe with a single stone containing a single seed.

Herbs, with simple entire toothed or palmately-lobed leaves, and white flowers in flat compound corymbose cymes.

According to Vaillant, the name of this genus of plants is derived from the Latin word *vieo*, I tie, on account of the pliability of the branches of some of the species. Viburna, in the plural, appears to have been applied by the ancients to any shrubs that were used for binding or tying.

SPECIES I.—VIBURNUM OPULUS. *Linn.*

PLATE DCXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXI. Figs. 3, 4.
Billot, Fl. Gall. et Germ. Exsicc. No. 1215.

Leaves deciduous, stalked, roundish in outline, 3-lobed, with the lobes acuminate, coarsely toothed and ciliated, finely pubescent, but not furfuraceous beneath. Petioles with adnate stipuliform appendages in the form of 1 (or sometimes 2) linear processes on each side a little above the base. Flowers in stalked sub-umbellate compound corymbose cymes, with the branches glabrous; exterior flowers of the cyme neuter, with the corolla much enlarged, rotate, with obovate contiguous segments.

In woods, thickets, hedges, and banks of streams. Rather common, and generally distributed, extending North to the counties of Ross and Aberdeen.

England, Scotland, Ireland. Shrub. Summer.

A shrub 3 to 6 feet high or more, with grey bark. Branches slender, flexuous, with elevated lines and numerous lenticels on the smooth yellowish-grey bark. Leaves $1\frac{1}{2}$ to 3 inches long, and nearly as broad, divided into 3 lobes, of which the terminal one is

usually the largest. Cyme 1½ to 3½ inches across, of numerous branches, starting from the same point, and then again repeatedly divided. Outer flowers pure white, ½ to ¾ inch across, without stamens or pistils; inner ones ⅕ inch across, cream-colour, widely campanulate, with the segments of the corolla roundish, slightly recurved. Stamens exserted. Fruit ⅜ inch long, slightly compressed, pale transparent red. Plant nearly glabrous. Leaves somewhat shining, paler beneath.

Common Guelder-Rose.

French, *Viorne Obier.* German, *Gemeine Schlinge,* or *Schneeball.*

The Guelder-Rose, so called from the country of its nativity, *Gueldres,* is not remarkable for its beauty when in a wild state, but under cultivation it becomes one of our most ornamental additions to the shrubbery. Its balls of white blossom contrast charmingly with the bright flowers of the lilac and the rich clusters of laburnum among which they are seen. Cowper describes the Guelder-Rose in a shrubbery as

> "Tall,
> And throwing up into the darkest gloom
> Of neighbouring cypress, or more sable yew,
> Her silver globes, light as the foamy surf
> That the wind severs from the broken wave."

The plant possesses similar properties to the Elder, and the fruit is eaten in Sweden. Pallas informs us that in Siberia the berries are fermented with flour, and a spirit distilled from them; or made into a paste with honey and flour, and eaten as food, though the pulp and juice of the berry have a very fœtid odour.

SPECIES II.—VIBURNUM LANTANA. *Linn.*

PLATE DCXL.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXI. Figs. 1, 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 246.

Leaves very shortly stalked, without stipules, ovate-oval or elliptical-oval, dentate-serrulate, deciduous, rugose, furfuraceous-pubescent beneath, especially on the veins, at length nearly glabrous. Flowers in a shortly-stalked compound corymbose convex-topped cyme, with the branches stellately pubescent. Flowers all equal, perfect.

In woods, thickets, and hedges. Common in all the chalky districts, and pretty generally distributed over the whole of the South and middle of England; not wild in Scotland.

England, [Scotland.] Shrub. Early Summer.

Stems 4 to 10 feet high or more, much branched, with brownish bark, that of the twigs smooth, reddish, densely clothed with scurfy pubescence. Leaves 1½ to 3 inches long, frequently sub-

cordate and slightly unequal at the base, subacute or rounded at the apex, white and with scurfy pubescence on the very prominent veins beneath when young, and with thinly-scattered stellate hairs on the upper surface. Flowering-shoots straight, stout, generally with fascicles of leaves in the axils, and terminated by compact much-branched cymes, 2 to 3 inches across. Flowers $\frac{1}{4}$ inch in diameter, cream-white; calyx-segments small, triangular; corolla between funnel-shaped and salver-shaped, with the segments of the limb ovate. Stamens exserted. Style very short and thick. Berry $\frac{3}{8}$ inch long, elliptical-oval, laterally compressed, so as to be flattish at first, dull-red, turning to nearly black when fully ripe in autumn. Leaves dull-green, much paler and whitish beneath.

Wayfaring-tree, Meal-tree.

French, *Viorne Mancienne.* German, *Wollige Schlinge.*

The pliant branches of this attractive tree give it its specific name. It is from the Latin word *lento*, I make pliant. In a state of good culture, in a free soil, it forms a handsome and durable small tree about 18 or 20 feet in height. It is a pleasant enlivener of more sombre foliage, and its ample heads of white flowers, which have caused it sometimes to be called the cotton-tree, are very charming objects. The fruit, which is at first green, then bright-red, and afterwards black, is greedily eaten by birds, and is not unpleasant to the taste, but is considered by some refreshing and astringent. The leaves in autumn assume a rich deep-red colour. The bark of the root will furnish bird-lime in the same way as the holly. The shoots are said by Pallas to be used in southern Russia for making pipe-stems. The bark is so acrid as to produce blisters when applied to the skin, and its use has been suggested by some writers for producing such effects medicinally. The wood is white and hard, and may be employed for many purposes in turning and cabinet-making. In Switzerland the fruit is used for making ink. Some beautiful lines, written by William Howitt, on the Wayfaring-tree, have been copied by nearly all writers on the subject from the time of Loudon; but as all our readers may not know them, I cannot help quoting a few verses.

"Wayfaring-tree! what ancient claim
Hast thou to that right pleasant name?
Was it that some faint pilgrim came
Unhopedly to thee
In the brown desert's weary way,
'Mid toil and thirst's consuming sway;
And there, as 'neath thy shade he lay,
Blest the wayfaring-tree?

"Or is it that thou lov'st to show
Thy coronets of fragrant snow,
Like life's spontaneous joys that flow
In paths by thousands beat?
Whate'er it be, I love it well;
A name, methinks, that surely fell
From poet, in some evening dell
Wandering with fancies sweet."

Sub-Order III.—LONICEREÆ.

Corolla more or less tubular, often irregular and somewhat bilabiate. Style elongated, filiform; stigmas 3, free or united into one. Fruit usually a berry with 1 to 3 or many seeds, more rarely a dry capsule.

Shrubs, frequently climbing, or herbs; leaves sometimes connate at the base; flowers on axillary peduncles, or verticillate in terminal racemes or heads.

GENUS IV.—LONICERA. *Linn.*

Calyx-limb 5-toothed. Corolla trumpet-shaped or funnel-shaped or bell-shaped, irregular, the limb divided into 2 lips, the upper with 4, the lower with 1 lobe; lobes equal in length, varying in the degree in which the lower one is separated from the other 4. Stamens 5. Style filiform, with a capitate or 3-lobed stigma. Fruit a juicy berry, 3-celled, or 1-celled by the obliteration of the partitions; cells few-seeded.

Twining or erect shrubs with entire sessile or sub-sessile leaves, which are sometimes connate. Flowers yellow or whitish, sometimes tinged with red or purple exteriorly, in terminal heads often with verticillasters beneath them, or in pairs on short axillary peduncles.

This genus of plants was named after Adam Lonicer, a physician of Frankfort, who was born in 1528 and died in 1586.

Section I.—CAPRIFOLIUM. *Linn.*

Stems climbing. Flowers sessile, in 1 or 2 or more whorls, in the axils of free or connate bracts towards the extremity of the flowering-shoots. Calyx-limb persistent. Corolla-tube sub-cylindrical.

SPECIES I.—LONICERA CAPRIFOLIUM. *Linn.*

Plate DCXLI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXIII. Figs. 1, 2, 3.
Billot, Fl. Gall. et Germ. Exsicc. No. 247.

Stems twining. Leaves deciduous, glabrous, glaucous beneath; those of the barren branches shortly stalked, suborbicular, oval or obovate; those on the flowering-shoots oblong, connate. Bracts foliaceous, large, connate, glabrous; bractioles very minute, scale-

like, glabrous. Flowers sessile, in whorls in the axil of the connate bracts at the termination of the flowering-shoots. Calyx-limb nearly entire, glabrous, not one-fourth the length of the ovary. Corolla-tube sub-cylindrical, longer than the ringent limb, pubescent with distant spreading hairs without glandular tips. Style glabrous.

In thickets. Rare, and doubtfully native. Cambridge and Essex are probably the only counties in which it is not certainly introduced.

England, [Scotland.] Shrub. Early Summer.

Stem with greyish bark, the young branches sub-glabrous, and often slightly glaucous. Leaves firm, glaucous beneath, 1½ to 3 inches long, the uppermost ones on the flowering-shoots connate, the bracts from which the flowers are produced so much so that each pair looks like a single leaf. Flowers 1½ inch long, pale-yellow, sometimes pink externally. Calyx-teeth extremely short. Upper lip of the corolla with 4 obtuse lobes, scarcely one-third the length of the whole; lower lip oblong, narrow, entire. Berries oval-ovoid, scarlet, not cohering together. The wild or subspontaneous form is the L. pallida, "*Host*" (Bor. Fl. du Centre de la Fr. Vol. II. p. 299), which is the L. Caprifolium præcox, D. C. Prod. Vol. IV. p. 331.

Perfoliate Woodbine.

French, *Chèvrefeuille des Jardins.* German, *Geissblatt.*

SPECIES II.—**LONICERA PERICLYMENUM.** *Linn.*

PLATE DCXLII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXII. Figs. 3, 4.
Billot, Fl. Gall. et Germ. Exsicc. No. 2075.

Stems twining. Leaves deciduous, glabrous, or slightly pubescent, slightly glaucous beneath; those of the barren branches shortly stalked, oval or elliptical, entire or rarely sinuate; those of the flowering-shoots similar, but sessile, always entire, not connate. Bracts much smaller than the leaves, foliaceous, clothed with gland-tipped hairs, free, reduced to a single pair beneath the lowest whorl of flowers; bractioles applied to the calyx, sub-orbicular or ovate, coloured, glandular-ciliated. Flowers subcapitate, sessile, in approximate whorls at the termination of the flowering-shoots, without foliaceous bracts (except below the lowest whorl). Calyx-limb glandular-pubescent, nearly as long as the ovary. Corolla-tube sub-cylindrical, generally shorter than the ringent limb, pubescent, with gland-tipped hairs.

In thickets, woods, and hedges. Common, and generally distributed.

England, Scotland, Ireland. Shrub. Summer and Autumn.

Very similar to L. Caprifolium, but with the leaves longer, 2 to 4 inches long, less glaucous beneath, and those of the flowering-shoots not connate. Flowers in more numerous verticels, forming a kind of terminal head or spike, the whorls not separated from each other by large foliaceous connate bracts, which are so conspicuous in L. Caprifolium. Corolla rather longer and more deeply cleft, dull-red outside, yellow within. The style and stamens are longer in proportion. The berries incline more to crimson than to scarlet.

Common Woodbine.

French, *Chèvrefeuille des Bois.* German, *Deutsche Lonitzere.*

The beauty and exquisite fragrance of this well-known plant make it a favourite everywhere. It is evidently the true Woodbine of the poets, and obtains its name from its habit of twining round the stems of other trees. Milton calls it the "twisted Eglantine," and Shakespeare says,—

> "So doth the Woodbine, the sweet Honeysuckle
> Gently entwist the maple."

At the base of its long tubular flower lies the honey, and when the bee cannot reach it, other insects tap it, by making punctures at the base of the tube, and thus regale themselves. In almost every country lane in England from early in June to August, are we delighted with the sweet scent of this pretty climber. Its twining stems, by their powerful constriction of young and soft-wooded trees while growing, often cause the latter to be deeply and spirally furrowed, though this is not often discovered till both are cut down. They turn from left to right, in this respect agreeing with the *Tamus* and *Polygonum Convolvulus*, and differing from the great white bindweed and the scarlet-runner, both of which twist from right to left. In summer the leaves are abundantly marked with pale and curving lines and winding tracks, the work of the little grub of some dipterous insect, which in those parts has eaten away the cellular tissue but left the cuticle untouched. No other English leaf, however, leaves such conspicuous evidences of his activity.

Shakespeare, as if loth to exclude both the familiar names of this favourite plant, brings them together in one beautiful picture. He tells us that Beatrice "lies couched in the *Woodbine* coverture," and Hero is told to

> "Bid her steal into the pleachèd bower,
> Where *Honeysuckles* ripened by the sun
> Forbid the sun to enter; like favourites
> Made proud by princes that advance their pride
> Against that power that bred it."

In the time of Chaucer the Woodbine was considered as the emblem of true love. The bright red berries of the Honeysuckle succeed the fragrant flowers and add a new feature to its beauty. They are a favourite food with birds and are perfectly harmless, unlike many berries of a similarly tempting appearance.

Section II.—XYLOSTEUM. *Linn.*

Stem self-supporting, more rarely climbing. Flowers in pairs, at the extremity of an axillary peduncle with 2 bracts at the apex. Calyx-limb deciduous. Corolla-tube funnelshaped-cylindrical.

SPECIES III.—LONICERA XYLOSTEUM. *Linn.*

Plate DCXLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXIV. Figs. 1, 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 789.

Stem self-supporting. Leaves deciduous, shortly stalked, oval or obovate-oval, pubescent on both sides; peduncles axillary, shorter than the leaves, 2-flowered; ovary pubescent. Bracts linear, pubescent; bractioles suborbicular, pubescent, applied to the calyx-tube. Flowers in pairs at the extremity of an axillary peduncle, equalling them in length. Calyx-limb slightly lobed, about one-third as long as the ovary, deciduous. Corolla-tube not half as long as the ringent limb, pubescent, with hairs not tipped with glands. Berries adhering to the base.

In thickets and hedges in several places, but probably native only near Arundel, Sussex, if even there. Hertfordshire is also a station in which it has been supposed to be native.

England, [Scotland,] [Ireland.] Shrub. Early Summer.

A branched shrub, 3 to 6 feet high, with slender flexuous twigs and pubescent shoots. Leaves 1½ to 3 inches long, finely pubescent above, more densely so beneath. Flowers ½ inch long, white changing to pale buff-yellow. Corolla-tube swollen at the base, the upper lip with 4 rounded lobes, the lower elliptical, entire. Base of the filaments and style pubescent. Berries the size of small currants, red. Plant pale-green.

Upright Fly-Honeysuckle.

French, *Chèvrefeuille des Haies.* German, *Gemeine Lonitzere.*

The specific name of this species has reference to the hardness of its wood, and comes from the two words ξυλον (*xulon*), wood, and οστεον (*osteon*), a bone. The clear parts between the joints of the shoots are used in Sweden as tubes for tobacco-pipes, and the wood from its hardness makes teeth for rakes.

GENUS V.—LINNÆA. *Gronov.*

Calyx-tube ovate, limb 5-partite, with lanceolate subulate deciduous segments. Corolla funnel-shaped, bell-shaped, contracted into a narrow tube at the base, 5-lobed at the apex, nearly regular. Stamens 4, dididymous, the 2 upper ones longer, included. Style exserted. Stigma globose. Fruit a dry berry with 3 cells, each cell with 2 ovules, but the fruit 1-seeded by abortion of the other seeds.

This genus contains only a single species, unlike the other plants of the order.

This genus of plants contains but one species, for which it was originally formed, and its interest consists in the fact that its name was given to it by Gronovius at the express desire of Linnæus, who chose this humble plant to transmit his own name to posterity.

SPECIES I.—LINNÆA BOREALIS. *Gronov.*

PLATE DCXLIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXX. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 376.

The only known species.

In fir woods; local. In a plantation of Scotch firs at Catcherside, in the parish of Heartburn, Northumberland, and in the counties of Berwick, Edinburgh, Perth, Forfar, Kincardine, Aberdeen, Banff, Moray, and Ross; possibly not wild South of the Tay.

England, Scotland. Perennial. Late Summer.

Stems slender, trailing, rooting, woody, pubescent with reflexed hairs, much branched with very long prostrate simple barren shoots, and short erect flowering branches 1 to 3 inches high. Leaves $\frac{1}{4}$ to $\frac{3}{4}$ inch in diameter, sub-coriaceous, evergreen, shortly stalked, roundish or roundish-obovate, faintly crenate in the apical half, blunt, sub-glabrous with scattered hairs, especially towards the margin. Peduncles terminal, erect from the apex of the flowering-shoots, $1\frac{1}{2}$ to 3 inches long, terminated by a pair of bracts, in the axils of which spring 2 slender slightly-diverging pedicels clothed with gland-tipped pubescence and hooked round near the top immediately beyond a pair of minute elliptical bractioles; the bent part of the pedicel rather shorter than the bristly ovary, which is embraced by a pair of oval bractioles. Flowers drooping, pale purplish-rose, $\frac{3}{8}$ inch long. Calyx-teeth linear lanceolate, about as long as the ovary. Corolla between bell-shaped and funnel-

shaped, variegated within with purplish-rose and white. The mature fruit I have not seen. Leaves deep-green above, pale beneath, somewhat resembling those of small states of *Veronica officinalis*.

Two-flowered Linnæa.

French, *Linnée du Nord.* German, *Nordische Linnäe.*

The name of this lowly, fragrant northern flower was changed from Nummularia to Linnæa, at the request of the great Swedish botanist, who said that its lonely depressed growth was a fitting emblem of his own early fate; and when in later years the Swedish government gave him a crest of this flower to add to his coat of arms, Linnæus placed it on his seal with this motto, "Tantus amor florum," so great is the love of flowers.

EXCLUDED SPECIES.

LONICERA ALPIGENA. *Linn.*

At the station for Geranium Phæum in Collinton Woods, Edinburgh, certainly planted.

DIERVILLA CANADENSIS. *Willd.*

Found by the late Mr. A. O. Black about the Burn, Forfarshire, but certainly planted.

SYMPHORICARPUS RACEMOSUS. *Mich.*

Not unfrequently found on the outskirts of gardens, and as it extends by its creeping roots, it will probably at length establish itself as a naturalized plant.

ORDER XXXVIII.—RUBIACEÆ.

Herbs, trees, or shrubs, with opposite leaves furnished with stipules, or verticillate leaves without stipules. Flowers regular, variously disposed, but generally in cymes. Calyx-tube adhering to the ovary (except in the sub-order Loganieæ); limb various, frequently obsolete. Corolla monopetalous, on the summit of the calyx-tube more or less deeply, 4- or 5- rarely 3- to 8-cleft or partite. Stamens as many as the petals. Ovary generally 2-celled or many-celled. Style single; stigmas usually combined. Fruit dry or a berry, or drupe, with as many cells as the ovary; the cells 1-, 2- or

many-seeded. Seed with the albumen horny or fleshy; embryo straight or slightly curved in the middle of the albumen; cotyledons foliaceous.

All the British species belong to the

Sub-Order I.—STELLATÆ.

Herbs with square stems and whorled entire leaves destitute of stipules. Flowers small, regular, white, yellow, pink, or purple, arranged in small terminal axillary dichotomous or corymbose cymes. Calyx-limb generally obsolete, when present 3- to 6-lobed. Corolla monopetalous, rotate or funnel- or salver-shaped; limb 3- to 6-cleft or -partite. Stamens as many as the lobes of the corolla. Fruit usually dry, 2-coccous, didymous; each coccum globular or sub-globular, indehiscent, 1-celled and 1-seeded, one of the cocca sometimes abortive. Seed with horny albumen.

GENUS I.—RUBIA. *Linn.*

Calyx-limb obsolete. Corolla flat, rotate; limb 3- to 5-partite. Stamens 3 to 5. Fruit of 2 globular fleshy indehiscent cocca, without any remains of the calyx-limb at the top, not separating from each other when ripe, one of cocca often abortive.

Diffuse herbs with square stems, having the leaves 4 to 8 in a whorl, and axillary peduncles bearing few-flowered cymes of small greenish-white or ochreous flowers.

The name of this genus of plants comes from *ruber*, red, in allusion to the colour which pervades its roots.

SPECIES I.—RUBIA PEREGRINA. *Linn.*

Plate DCXLV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXIX. Fig. 3.
Billot, Fl. Gall. et Germ. Exsicc. No. 1890.

Stem herbaceous, rough, woody at the base. Leaves 4 to 6 in a whorl, evergreen, rigid, varying from elliptical to roundish-oval, glabrous, with the margins and midrib rough beneath with short curved prickles. Flowers in axillary and terminal forked cymes arranged in a leafy panicle. Corolla rotate, with the segments ovate, cuspidate.

In bushy places, thickets, hedges, and rocky ground. Not uncommon in the South-west of England; occurring in the counties of Cornwall, Devon, Somerset, Dorset, Hants, Sussex, Kent,

Gloucester, Monmouth, Glamorgan, Pembroke, Hereford, Carnarvon, and Merioneth.

England. Perennial. Late Summer.

Stem perennial, woody, tough, simple, leafless below, with an ash-coloured bark, branched above; branches herbaceous, acutely quadrangular, the angles rough with small deflexed prickles. Leaves varying much in shape, $\frac{1}{2}$ to $2\frac{1}{2}$ inches long; branches of the panicle equalling or exceeding the leaves from which they spring. Corolla pale yellowish-green, $\frac{1}{5}$ inch across, deeply cleft, usually into 5 spreading lobes. Stamens very short. Fruit about the size of a buck-shot, black, roundish, containing a single seed, or didymous when there are two. Plant deep-green, glabrous.

Wild Madder.

French, *Garance Etrangère.* German, *Röthe.*

The madder-roots of commerce, so valuable for their deep red dye, are supplied by a species of this genus, *Rubia tinctorum*, a plant differing very little from our wild native species. This dyer's madder comes from the South of Europe, and is cultivated largely for the sake of its roots. Its culture has been tried in England, but as a commercial speculation was unsuccessful, as its price will not compete with that imported from abroad.

GENUS II.—GALIUM. *Linn.*

Calyx-limb obsolete, or of 4 very small teeth. Corolla flat, rotate (or with a very short campanulate tube), 4-partite. Fruit didymous, of 2 globular dry indehiscent cocca, without any remains of the calyx-limb at the top, separating from each other when ripe.

Herbs with diffuse stems, with the leaves 4 to 12 in a whorl, and axillary peduncles bearing few-flowered cymes of small white, pink, or yellow flowers; cymes often united so as to form a panicle.

The derivation of the name of this genus is from γαλα (*gala*), milk, from its effect in curdling that liquid.

SPECIES I.—GALIUM BOREALE. *Linn.*

PLATE DCXLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXVI. Fig. 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 999.

Perennial. Stem stiff, erect, glabrous or pubescent, branched throughout, with the branches erect-ascending. Leaves firm, 4 in a whorl, lanceolate-elliptical or elliptical or strapshaped-elliptical, 3-nerved, hairy or rough on the margins and on the veins under-

neath. Flowers all perfect, white, arranged in a compact leafy panicle, with ascending branches longer than the leaves from which they spring. Fruit thickly covered with bristly hairs hooked inwards at the apex.

On moist rocks, especially by the sides of streams in mountainous districts. Not uncommon in North Wales, Yorkshire, the North of England, and Scotland; common in the Highlands.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock creeping. Stem tough, somewhat wiry at the base, 8 to 18 inches high. Leaves ½ to 1½ inch long, variable in breadth. Panicle with the branches approximate, short, stiff, leafy, the leaves or bracts opposite, small, ovate. Flowers ⅕ inch across. Fruit about the size of grains of sago, dark-olive, with whitish hairs. Plant bright-green, turning blackish in drying, glabrous or puberulent, with the veins on the leaves frequently pubescent beneath.

Cross-leaved Bedstraw.

French, *Gaillet Boréal.* German, *Nordisches Labkraut.*

All the species of Galium are known commonly as Bedstraws, and we find on inquiring the origin of this name, that at a time before the invention of feather-beds and luxurious spring couches, these plants, among others, formed the bedding of our ancestors. Dr. Prior gives the name as "Our Lady's Bedstraw," and suggests that it may allude more particularly to the Virgin Mary having given birth to her Son in a stable, with nothing but wild flowers for her resting-place.

SPECIES II.—GALIUM CRUCIATUM. *With.*

PLATE DCXLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXV. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 2475.
G. Cruciata, *Scop. Benth.* Handbook Brit. Fl. p. 274. *D. C.* Prod. Vol. IV. p. 606. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 361. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 16.
Valantia cruciata, *Linn.* Sp. Pl. p. 1491.

Perennial. Stems weak, decumbent, hairy, branched only at the base; branches simple, ascending. Leaves thin, 4 in a whorl, oval-elliptical or oval-ovate, with a distinct central nerve and 2 indistinct lateral ones, hairy all over, especially beneath. Flowers polygamous, yellow, in axillary cymes, with the peduncles not exceeding or shorter than the leaves from which they spring, divaricate and the pedicels recurved after flowering. Fruit glabrous, smooth.

In hedge-banks and open places in woods and thickets.

Common in England and the South of Scotland, but absent in the extreme North of the latter country.

England, Scotland. Perennial. Spring and Summer.

Rootstock creeping. Stem dividing at the base into numerous weak slender hairy branches, 6 inches to 3 feet long. Lowest leaves small, in approximate whorls, increasing in size and becoming more distant in the middle of the stem, and again decreasing and becoming more approximate towards the apex, the largest ½ to 1 inch long. Cymes in whorls of 4, few-flowered, the lateral flowers mostly male, all rather pale-yellow, ⅛ inch across. Fruit about the size of sago-grains, one of the two often abortive. Plant pale-green, retaining its colour when dried, softly hairy.

Mugwort.

French, *Gaillet Croisette.* German, *Kreuz Labkraut.*

SPECIES III.—GALIUM VERUM. *Linn.*

PLATE DCXLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXVII. Fig. 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 1494.

Perennial. Stem stiff, erect, ascending or decumbent, branched throughout, with the branches ascending. Leaves firm, 8 to 12 in a whorl, linear-strapshaped or linear, 1-nerved, generally rough above, pale and shortly pubescent beneath, reflexed at the margins, mucronate. Flowers all perfect, yellow, arranged in a rather compact leafy terminal panicle, with the branches longer than the leaves from which they spring. Pedicels spreading after flowering. Fruit smooth, glabrous.

Var. *α, luteum.*

Flowers bright-yellow. Plant turning black when dried.

Var. *β, ochroleucum.*

G. decolorans? *Gr. & Godr.* Fl. de Fr. Vol. II. p. 19.

Flowers whitish-yellow. Plant remaining greenish when dried.

In pastures and hedge-banks, especially on sandy soils. Common, and generally distributed. Var. *β* growing with var. *α* and Galium elatum, on Deal Sandhills, Kent.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock stoloniferous, producing numerous stems, more or less erect from a decumbent base, 8 inches to 3 feet high, or when

growing on the seashore often prostrate and shorter. Stem much less distinctly quadrangular than in the other British species, thinly clothed with short woolly hairs. Leaves ¼ to 1 inch long. Panicle very compound, with numerous ascending compactly flowered branches. Flowers ⅛ inch across, bright-yellow in var. *α*, but ochreous in var. *β*, which frequently has the leaves a little broader and the stems always more distinctly quadrangular; from which, and from the fact of its always being found in company with the yellow-flowered G. verum and white-flowered G. elatum, it is considered by many botanists as a hybrid between these two. Fruit very small, about the size of poppy (maw) seed, black. Plant deep-green, the leaves generally roughish above and pubescent beneath.

Yellow Bedstraw, or Cheese-Rennet.

French, *Gaillet Jaune.* German, *Achtes Labkraut.*

This is one of the prettiest plants that deck our hedge-banks, gaily blossoming for full three-quarters of the year. When luxuriant it is extremely cheerful and pretty; the yellow clusters, a foot in length, mingling not uncommonly with the great white Bedstraw, and making the banks appear like silver inlaid with gold. It grows on our driest sand-banks, and though the panicles are shorter, they have the same bright yellow colour and cover many an arid place with verdure. The flowers will coagulate boiling milk; hence it is called rennet. The French prescribe them in hysteria and epilepsy. Boiled in alum-water they tinge wool yellow. The roots dye a very fine red, not inferior to madder, and are used for this purpose in the island of Java. According to John Ray, the flowering tops when distilled make a refreshing beverage, and the roots are useful as an astringent medicine.

Gerarde says, "The people of Tuscanie or Hetruria doe use it to turne their milk, that the cheese which they make of sheep's and goat's milk might be the sweeter and more pleasant in taste, and also more wholesome." He adds,—"The people in Cheshire, especially about Nantwich, where the best cheese is made, doe use it in their rennet, esteeming greatly of that cheese above other made without it."

SPECIES IV.—GALIUM DIFFUSUM. *Hook.*

PLATE DCXLVIII. (*bis*).

"*D. Don*, MS." *Hook.* Fl. Scot. p. 52.
G. cinereum, *Sm.* Eng. Fl. Vol. I. p. 203. *Sow.* Eng. Bot. No. 2784* (non *All.*).

Perennial. Stem weak, ascending, much branched throughout; branches ascending, glabrous. Leaves 6 to 8 in a whorl, firm, strapshaped-linear, aristate, 1-nerved, glabrous, curved upwards. Flowers all perfect, white, in long-stalked lax umbellate cymes arranged in a lax panicle, with ascending branches much longer than the leaves from which they spring. Corolla lobes acuminate-

* In the original edition the Nos. 2783 and 2784 are misplaced: the drawings are correctly numbered, and the error has been rectified in the second edition.

cuspidate. Fruit glabrous, not tuberculate. Plant pale- (glaucous?) green.

On the banks of the Water of Leith, near Slateford, about three miles from Edinburgh. Mr. G. Don.

Scotland? Perennial. Autumn.

Stem apparently about 18 inches long, bluntly quadrangular. Leaves 8 in a whorl on the stem, 6 on the branches, stiff, with a rather thick central nerve, all curving upwards, $\frac{1}{2}$ to $\frac{3}{4}$ inch long, with bristles pointing forwards on the margins which are revolute. Cymes all stalked; peduncles at the extremity of the stem and in axils of the upper leaves naked at the base, with about 3 primary divisions arranged in a sub-umbellate manner: the cymes combined form a very lax panicle. Flowers $\frac{1}{5}$ inch across, perfectly rotate, with long narrow segments.

Of this I have seen only the single specimen from Don contained in Smith's Herbarium. I am unable to identify it with any of the continental species; from G. cinereum and G. erectum it is certainly distinct; it has quite the habit, stem, leaves and inflorescence of G. glaucum, *Linn.* (Asperula galinoides, *Bieb.*), but the flowers have not the distinct though short campanulate tube which distinguishes those of that species. It must be considered as a very doubtful native, as no one except Don has found it.

Diffuse Bedstraw.

SPECIES V.—GALIUM MOLLUGO. *Linn.*

PLATES DCXLIX. DCXLIX. (*bis*) DCL.

Perennial. Stem weak, decumbent or ascending, much branched throughout; branches ascending or spreading, glabrous or hairy. Leaves 6 to 8 in a whorl, rather firm, strapshaped-oblanceolate or elliptical-oblanceolate or oblanceolate, mucronate, 1-nerved, glabrous or finely pubescent beneath, spreading or reflexed. Flowers all perfect, white, in rather lax cymes, arranged in a lax panicle, with ascending or spreading branches, much longer than the leaves from the axils of which they spring. Corolla-lobes cuspidate. Fruit glabrous, irregularly shagreened but not tuberculate. Plant green, not turning black in drying.

Sub-Species I.—Galium erectum. *Huds.*

Plates DCXLIX. DCXLIX. (*bis*).

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXVIII. Fig. 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 570.
"G. lucidum, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 366," *Gr. & Godr.*

Stem sub-erect, with erect branches. Leaves strapshaped or oblanceolate-strapshaped. Panicle slender, with all the branches ascending in fruit.

Var. α, *genuinum.*

Plate DCXLIX.

Stem rather stiff. Leaves generally 8 in a whorl.

Var. ? β, *aristatum.* Bab.

Plate DCXLIX. (*bis*).

G. aristatum, *Sm.* Eng. Fl. Vol. I. p. 203. *Sow.* Eng. Bot. Suppl. No. 2784 (non *Linn.*).

Stem diffuse, weak (?). Leaves mostly 6 in a whorl, similar to those of var. α, but with a longer mucro.

On banks and by roadsides. Rather rare. It occurs in Hants, Sussex, Kent, Surrey, Essex, Norfolk, Cambridge, and Yorkshire: near Edinburgh, Forfar, and near Bonnar Bridge, Ross-shire. Var. β, Forfarshire, found by Mr. G. Don.

England, Scotland, Ireland. Perennial. Summer and late Autumn.

Stem 1 to 2 feet high, generally glabrous, at least in the upper part. Leaves $\frac{1}{2}$ to $\frac{3}{4}$ inch long, ascending. Panicle slender, pyramidal. Flowers $\frac{1}{8}$ inch across. Fruit-pedicels divaricate. Fruit olive-black, about the size of the grains in a fig. Plant light-green, retaining its colour in drying.

I am acquainted with var. β only from the very imperfect specimens in Smith's Herbarium. These have the large fruit and narrow leaves of G. erectum, but the stems seem weaker, and the habit is rather that of narrow-leaved forms of G. elatum. It is evidently one of the intermediate forms which connect the two sub-species; but Professor Babington is probably correct in referring it to G. erectum.

Narrow-leaved Great Bedstraw.

French, *Gaillet Dressé.*

Sub-Species II.—Galium elatum. *Thuill.*

Plate DCL.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXVIII. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 2477 ?
G. Mollugo, *Huds.* *D. C.* Prod. Vol. IV. p. 596. *Bab.* Man. Brit. Bot. ed. v. p. 101.
Hook. & *Arn.* Brit. Fl. ed. viii. p. 196. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 365.

Perennial. Stem decumbent, much branched with divaricate branches. Leaves oblanceolate or obovate, rarely linear-oblanceolate. Panicle broad, the lower branches divaricate in fruit.

Var. α, *genuinum.*

Leaves usually 8 in a whorl, oblanceolate. Branches of the panicle many-flowered.

Var. β, *insubricum.* Gaud.

Leaves usually 6 in a whorl, obovate. Branches of the panicle few-flowered.

Var. γ, *Bakeri.*

Leaves 6 to 8 in a whorl, strapshaped or linear-strapshaped. Branches of the panicle few-flowered.

On banks by roadsides, and in waste places. Common in chalky districts, and generally distributed throughout England; rare in Scotland, from which country I have seen specimens only from Dirleton, Haddingtonshire. Var. γ near Thirsk.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Very like G. erectum, with which the var. Bakeri connects it, but generally a larger and more diffusely-branched plant, with the leaves spreading, the lower branches of the panicle diverging from the stem at a much greater angle, the flowers and fruit rather smaller. The stem is frequently 3 or 4 feet long when supported by bushes in its vicinity, thickened under the joints, and with the leaves generally glabrous; but forms occur in which both the leaves and stem are pubescent. The Yorkshire Galium, which I have named after Mr. J. G. Baker, is one of three or four of the intermediate forms which connect G. erectum with G. elatum, of which G. aristatum (Sm.) is another. (See Baker, in Journal of Botany, 1863, p. 290.)

Common Great Bedstraw.

French, *Gaillet Blanc.* German, *Gemeines Labkraut.*

This plant has been recommended by French physicians as a cure for epilepsy. Its roots yield a red dye similar to that from madder.

SPECIES VI.—GALIUM SAXATILE. *Linn.*

PLATE DCLI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCIV. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 2077.
G. Hercynicum, *Weig. D. C.* Prod. Vol. IV. p. 598.

Perennial. Stems weak, decumbent or prostrate, branched throughout, especially towards the base, where there are very numerous prostrate barren shoots; flowering branches ascending, glabrous. Leaves mostly 6 in a whorl, rather firm, obovate on the barren shoots, oblanceolate or oblong-oblanceolate on the flowering branches, abruptly mucronate, 1-nerved, glabrous, ciliated with small prickles pointing forwards. Flowers white, in compact cymes arranged in a rather lax panicle; branches ascending, much longer than the leaves from the axils of which they spring. Lobes of the corolla not cuspidate. Fruit glabrous, granulated with small tubercles. Plant turning black in drying.

On barren heaths and commons, and in upland pastures, borders of woods, and on rocks. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Plant growing in rather dense tufts from the great number of short prostrate barren branches produced at the base of the stem: on these barren branches the leaves are small, 4 to 6 in a whorl, $\frac{1}{3}$ to $\frac{1}{4}$ inch long, and the internodes short. On the flowering stem the internodes are elongated, the leaves are 6 in a whorl, longer, narrower, and less enlarged towards the apex. Flowers $\frac{1}{10}$ inch across, pure white, in few-flowered compact cymes; fruit-pedicels divaricate. Fruit the size of the grains in a fig, roughened all over with minute acute tubercles. Plant glabrous, or nearly so.

Heath Bedstraw.

French, *Gaillet des Rochers.* German, *Felsen Labkraut.*

SPECIES VII.—GALIUM SYLVESTRE. *Poll.*

PLATE DCLII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCIII. Fig. 3.
G. pusillum, *Sm.* Eng. Bot. No. 74 (non *Linn.*).

Perennial. Stems slender, weak, spreading-ascending, slightly branched throughout, with few barren shoots, glabrous or pubescent below. Leaves 6 to 8 in a whorl, firm, linear-oblanceolate or

narrowly strapshaped or linear-acuminate, mucronate, 1-nerved, glabrous, or the lower ones with short stiff hairs, commonly ciliated with small prickles or hairs directed outwards or curved backwards. Flowers all perfect, white; in rather lax cymes arranged in a somewhat lax panicle, frequently sub-corymbose at the top; the branches ascending, much longer than the leaves from the axils of which they spring. Lobes of the corolla acuminate, not cuspidate. Fruit glabrous, granulated with small tubercles. Plant generally not turning black in drying.

Var. α, *montanum*. Vill.

PLATE DCLII.

Billot, Fl. Gall. et Germ. Exsicc. No. 377.
G. montanum, *Vill. Gr. & Godr.* Fl. de Fr. Vol. II. p. 33 (non *Linn.*).
G. pusillum, *Sm.* Eng. Bot. No. 74 (non *Linn.*) (plate only).
G. montanum et G. sylvestre (part), *Bab.* Man. Brit. Bot. ed. v. pp. 161, 162.
G. læve, *Thuil. Jord.* Frag. III. p. 150.

Stem glabrous, rather stiff, not flexuous, sharply quadrangular. Leaves linear-oblanceolate, rather suddenly acuminate and aristate, glabrous, with the margins smooth or ciliated, slightly revolute; dorsal nerve prominent beneath and slender. Flowers in lax few-flowered corymbose cymes arranged in a blunt-topped panicle, with the branches rather short ascending.

Mountain Bedstraw.

French, *Gaillet du Piémont.* German, *Heide Labkraut.*

(?) Var. β, *nitidulum*. Thuill.

Billot, Fl. Gall. et Germ. Exsicc. No. 378.
G. sylvestre, *Vill. Gr. & Godr.* Fl. de Fr. Vol. II. p. 33. *Jord.* Frag. III. p. 145.
G. sylvestre (part) et G. commutatum, (?) *Bab.* Man. Brit. Bot. ed. v. p. 162 (non *Jord.* Frag. III. p. 149, nec *Gr. & Godr.* Fl. de Fr. Vol. II. p. 33).

Stem weak, flexuous, glabrous, or hairy towards the base, bluntly quadrangular. Leaves nearly linear, glabrous, or the lower ones hairy, with the margins generally ciliated with recurved prickles, strongly revolute; dorsal nerve prominent beneath and slender. Flowers in rather compact corymbose cymes arranged in a lax panicle, with the branches spreading-ascending, the lower ones spreading.

In pastures and upland districts, heaths, and on rocks. Rather rare in the midland and northern counties of England and in

Scotland, except in the extreme North. Var. α I have from Castleton, Derbyshire; Settle, Teesdale, Leyburn, and Richmond, Yorkshire; var. β from Matlock Bath and Cromford Moor, Derbyshire, and Teesdale, Yorkshire.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stems diffuse, 4 to 20 inches high. Lower leaves shorter and broader than the upper ones, about $\frac{1}{4}$ inch long, the upper ones $\frac{1}{4}$ to 1 inch long. Panicle rather small, often sub-corymbose in var. α; in var. β with the branches longer, but the flowers in more compact cymes. Flowers similar to those of G. saxatile, but rather smaller. Fruit also similar, but with the tubercles more minute. Plant greyish-green, somewhat shining, and retaining its colour if dried with ordinary care.

The Teesdale plant, supposed to be G. commutatum of Jordan, for specimens of which I am indebted to Mr. J. G. Baker, is certainly not the plant described by Grenier and Godron. Of this I have specimens authenticated by MM. Grenier and Jordan: these have the leaves very narrow, with the midrib extremely thick, filling up the greater part of the lamina; and the plant is also of a stouter habit.

Slender Bedstraw.

French, *Gaillet Sauvage.* German, *Heide Labkraut.*

SPECIES VIII.—GALIUM PALUSTRE. *Linn.*

PLATES DCLIII. DCLIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCV.

Perennial. Stems weak, diffuse, branched throughout, with numerous barren shoots, smooth or rough at the angles. Leaves 4 to 6 in a whorl, often unequal, thin, oblong-elliptical or strap-shaped, obtuse and not mucronate at the apex, 1-nerved, glabrous, usually ciliated at the margins with small prickles curved backwards. Flowers all perfect, white, in small cymes arranged in a lax pyramidal panicle; the branches ascending or spreading, much longer than the leaves from the axils of which they spring. Lobes of the corolla acute. Fruit glabrous, finely and irregularly shagreened. Plant turning black in drying.

Var. α, *elongatum.*

PLATE DCLIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1684.
G. elongatum, *Presl. Gr.* & *Godr.* Fl. de Fr. Vol. II. p. 39. *Jord.* Frag. III. p. 170.
G. palustre, *Sm.* Eng. Bot. No. 1857.

Stems thick, weak, 1 to 4 feet long. Leaves $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, strapshaped-oblong, or oblong-elliptical, or oblanceolate-elliptical. Branches of the panicle more or less spreading, not reflexed after flowering. Flowers $\frac{1}{5}$ inch across. Fruit-pedicels divaricate. Fruit about the size of a rape-seed.

Var. β, *genuinum.*

G. palustre, *Presl. Jord.* Frag. III. p. 170. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 39.

Stems generally smooth, 6 inches to 3 feet long, more tufted than in var. α. Leaves $\frac{1}{2}$ to $\frac{3}{4}$ inch long, narrower than in var. α. Branches of the panicle spreading, often divaricate or reflexed after flowering. Fruit-pedicels divaricate. Corolla and fruit one-third smaller, and produced earlier in the season than in var. α.

Var. γ, *Witheringii.*

PLATE DCLIV.

G. Witheringii, *Sm.* Eng. Bot. No. 2206.
G. uliginosum, var. *Benth.* Handbook Brit. Fl. p. 275.

Similar to var. β, except that the stem is conspicuously rough with recurved bristles; the leaves narrower, linear-strap-shaped, recurved; the panicle narrow, with the lateral branches short and often ascending.

In ditches and wet places. Very common, and generally distributed. The var. α less abundant, and var. γ rather rare.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Root creeping; stems procumbent or ascending, supporting themselves by trailing over surrounding plants. Plant very variable in size, sometimes not larger than G. saxatile or G. sylvestre, sometimes as large as G. Mollugo. Leaves shining-green, much less stiff than in the other white-flowered perennial species; the corolla less flat, turning blackish-purple in drying.

Marsh Bedstraw.

French, *Gaillet des Marais.* German, *Sumpf Labkraut.*

SPECIES IX.—GALIUM ULIGINOSUM. *Linn.*

PLATE DCLV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCIII. Fig. 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 2076.

Perennial. Stems weak, branched throughout, with rather few barren shoots, very rough at the angles with deflexed hooked

prickles. Leaves firm, 4 to 8 in a whorl, oblanceolate-strapshaped or linear-acuminate and mucronate at the apex, 1-nerved, glabrous, strongly ciliated at the margins with recurved prickles. Flowers all perfect, white, in small rather lax corymbose cymes disposed in a narrow corymbose-topped panicle; branches spreading-ascending, much longer than the leaves from the axils of which they spring. Lobes of the corolla acute. Fruit glabrous, shagreened. Plant remaining green in drying.

In ditches and wet places. Rather common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Extremely like small rough states of the preceding, but a less straggling plant, with the leaves much firmer in texture and acuminate, not blunt; the deflexed prickles on the stem and leaves are much stronger than in any of the forms of the preceding, the leaves firmer, narrower, and more numerous. The flowers are smaller, the barren branches fewer, and not forming dense tufts, and with 6 instead of 4 leaves in each whorl. The fruit is smaller and rather more distinctly shagreened; the panicle much narrower and with fewer flowers. The leaves, both in G. palustre and G. uliginosum, have a second row of prickles on the upper surface near the margin; in this inner row the prickles point forwards instead of backwards, as those in the marginal row.

Rough Marsh Bedstraw.

French, *Gaillet Fangeux.* German, *Morast Labkraut.*

SPECIES X.—GALIUM ANGLICUM. *Huds.*

PLATE DCLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCVI. Fig. 5.

G. Parisiense (*Linn.*), var. anglicum, *Hook. & Arn.* Brit. Fl. ed. viii. p. 197. *Benth.* Handbook Brit. Fl. p. 276.

G. Parisiense, var. leiocarpum, *Tausch. Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 63.

G. Parisiense, var. nudum, *Gr. & Godr.* Fl. de Fr. Vol. II. p. 42.

Annual. Stems spreading, diffuse, generally much branched, rarely erect and solitary, slender, glabrous, with small hooked prickles on the angles, without barren shoots. Leaves firm, 5 to 7 (generally 6), in a whorl, oblanceolate-strapshaped or linear-elliptical-strapshaped, acuminate and mucronate at the apex, glabrous, rough on the margins with small prickles pointing forwards. Flowers greenish-white, in few-flowered corymbose cymes combined into a narrow elongate lax panicle; the branches spreading or

spreading-ascending, longer than the leaves from which they spring. Fruit glabrous, granulated with small tubercles. Plant turning black in drying.

On old walls and dry sandy places. Rare. Apparently confined to the counties of Kent, Essex, Suffolk, Norfolk, and Cambridge.

England. Annual. Summer.

Plant branching from the crown of the root, the stems weak, ascending, 4 inches to 1 foot long, rarely when small with a single erect stem. Leaves $\frac{1}{4}$ to $\frac{1}{2}$ inch long, at first spreading, afterwards reflexed. Flowers extremely small and inconspicuous. Fruit smaller than in any other of the British species.

This appears to be a sub-species of G. parisiense, the typical form of which has the fruit clothed with hairs curving inwards; but this hispid-fruited form has not occurred in Britain.

Wall Bedstraw.

French, *Gaillet des Anglais.* German, *Parisisches Labkraut.*

SPECIES XI.—GALIUM VAILLANTII. *D. C.*

PLATE DCLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCVII. Fig. 3.

Billot, Fl. Gall. et Germ. Exsicc. No. 2480.

G. spurium, var. Vaillantii, *Reich. Bab.* Man. Brit. Bot. ed. v. p. 160. *Hook. & Arn.* Brit. Fl. ed. viii. p. 198. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 44.

G. Aparine, var. Vaillantii, *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 363. *Benth.* Handbook Brit. Fl. p. 277.

Annual. Stems branched principally towards the base, diffuse, trailing, glabrous, except sometimes immediately above the nodes, rough on the angles with deflexed prickles. Leaves 6 to 8 in a whorl, linear-strapshaped, slightly attenuated towards the base, acuminate, clothed with short distant hairs, very rough on the margins with hooked prickles curved backwards. Flowers whitish-green, 3 to 9 in axillary sub-umbellate cymes, with 2 or 3 bracts where the pedicels spring from the peduncle; peduncles divaricate, straight, rather longer than the leaves from which they spring; pedicels straight, not recurved after flowering. Fruit blackish-olive, of 2 grains about the size of rape-seed or less, finely shagreened, thickly clothed with white hairs abruptly hooked at the point.

In cultivated fields. Rare. About Saffron Walden, Essex.

England. Annual. Summer and Autumn.

Stem 6 inches to 3 feet long, with numerous shorter branches

towards the base, with the 4 elevated lines closely covered with small prickles with dilated bases. Leaves ½ to 1½ inch long, very narrow, rough at the margins and midrib. Flowers very minute. Fruit dark olive-colour, somewhat shining, clothed with white hairs. Plant bright-green.

This plant is no doubt a sub-species of G. spurium, which has not been found in Britain except as a casual straggler. Very possibly both G. spurium and G. Vaillantii ought to be considered as merely sub-species of G. Aparine, from which the smaller and less tuberculated fruit, with longer and less hooked hairs, are the only material points of difference.

Hispid-fruited Corn Bedstraw.

French, *Vaillantie Hérissée.*

SPECIES XII.—GALIUM APARINE. *Linn.*

PLATE DCLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCVII. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 3408.
G. Aparine, var. *a, Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 863. *Benth.* Handbook Brit. Fl. p. 277.

Annual. Stem branched principally towards the base, diffuse, trailing or supporting itself on surrounding plants, glabrous except usually immediately above the nodes; rough on the angles with deflexed prickles. Leaves 6 to 8 in a whorl, strapshaped-oblanceolate or -obovate, rather abruptly acuminate, clothed with short distant hairs, very rough on the margins with hooked prickles curved backwards. Flowers white, about 3 in a sub-umbellate cyme, with a whorl of bracts where the pedicels spring from the peduncle. Peduncles divaricate and straight, rather longer than the leaves from which they spring; pedicels straight (not recurved) after flowering. Fruit pale-olive or dull-purplish, of 2 grains nearly the size of hemp-seed, coarsely tuberculate, the tubercles crowned by short white hairs with enlarged bases and sharply hooked tips.

In hedges and cultivated ground. Very common, and generally distributed.

England, Scotland, Ireland. Annual. Summer and Autumn.

Stem 1 to 5 feet long (the latter only when supporting itself by its hooked prickles amongst the plants in a hedge), somewhat thickened at the joints. Leaves ½ to 2 inches long. Flowers very small, 2 to 5, on rather short peduncles; the pedicels divaricate. Fruit

pale-olive or purplish when quite ripe, readily attaching itself to the coats of animals and the clothes of passers-by by means of its hooked hairs, as, indeed, is the tendency of the whole plant, from the prickles on the stem and margins of the leaves.

Goosegrass.

French, *Gaillet Grateron.* German, *Kletterndes Labkraut.*

Most persons are acquainted with the peculiar characteristic of this creeping plant. From its well-known property of clinging to whatever it comes in contact with, it is called Cleavers, Catch-weed, or Scratch-weed, and also Goosegrass, from its being a favourite food of these birds. In a very curious book just published, called "Leechdom's Wortcunning and Star Craft of Early England," edited and collected by the Rev. Oswald Cockayne, M.A., many curious revelations as to the medical philosophy of our Saxon forefathers are made, and it is interesting in these remote times to know something of the mysterious qualities at one period ascribed to our commonest herbs. We find our little Goosegrass endowed with wondrous powers. It is called clote, clite, or clivers, and the old herbal says,—"This wort is named φιλάνθρωπος [from φίλος, a lover, and ἄνθρωπος, a man], and is in our language men-loving, because it will readily cleave to a man. One also nameth it by another name clote, and it from itself sendeth forth many boughs, and those long and four-edged; and it is stiff in leaves, and it hath a great stalk, and in the middle is hollow, as we before said. For rends of adders and of the worms, which one calleth φαλάγγια or tarantulas, take wash of this wort pounded in wine, give it to drink, it will be of benefit. For sore of ears, take ooze of this ilk wort, drip on the ear, it healeth the sore."

Our old friend Gerarde, some centuries later, seems yet to have retained a belief in many of the virtues of the Goosegrass. He says,—"The juyce which is pressed out of the seeds, stalkes, and leaves, as Dioscorides writeth, is a remedie for them that are bitten of the poison, some spiders, called in Latine *phalangia*, and of vipers if it be drunk with wine. And the herbe stamped with swines grease wasteth away the kernels by the throte. Pliny teacheth that the leaves being applied doe also stay the abundance of bloud issuing out of wounds. Women do usually make pottage of clevers with a little mutton and otemeale, to cause lanknesse, and keepe them from fatnesse." According to Linnæus, the stalks are used in Sweden as a filter to strain milk through. Dioscorides relates that the shepherds made the same use of it in his time. It is considered in rural districts to be a purifier of the blood, and for that purpose the tops are put into spring broth. The expressed juice of the herb taken to the amount of four ounces, or quarter of a pint, night and morning during several weeks, is supposed to be valuable in cutaneous disorders. The seeds are a substitute for coffee. The roots, like most of the genus, will dye red, and eaten by birds, are said to have tinged their bones of that colour.

SPECIES XIII.—GALIUM TRICORNE. *With.*

PLATE DCLIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCXCVIII. Fig. 3.
Billot, Fl. Gall. et Germ. Exsicc. No. 1216.

Annual. Stems branched principally towards the base; the branches simple, prostrate, glabrous, the angles very prominent,

rough with deflexed prickles. Leaves 6 to 8 in a whorl, strap-shaped, slightly attenuated towards the base, cuspidate, glabrous, very rough on the margins with hooked prickles curved backwards. Flowers white, 1 to 3 in umbellate cymes, with or without a pair of bracts where the pedicels spring from the peduncle. Peduncles ascending, slightly recurved after flowering, shorter than or only equalling the leaves from which they spring; pedicels strongly recurved in fruit. Fruit of 2, or more often (by abortion) of 1 globular grain, about the size of a sweet-pea seed, white, evenly granulated with rather large tubercles but no hairs.

In cultivated fields. Common in chalky districts, more rare elsewhere, and not reaching North of Yorkshire and Durham.

England. Annual. Summer.

Very like G. Aparine, but with the leaves much less dilated towards the apex, and without hairs, the prickles on the stem and leaves stronger. Leaves much more abruptly acuminate; the flowers smaller, and of a yellower white; the fruit peduncles much shorter, and the pedicels recurved, and being 3 in number, have been repeatedly compared to the balls over a pawnbroker's shop. The fruit is larger, whiter, and without the hooked bristles of G. Aparine. The plant is of a yellower green.

G. tricorne, G. Aparine, G. Vaillantii, and G. cruciatum are the only British species with truly axillary inflorescence in which the flowers begin to open first in the cymes at the bottom of the flowering portion of the stem and proceed to expand regularly towards the apex—in the others the flowers begin to open simultaneously all over the panicle, or even first at its apex.

Rough Corn Bedstraw.

French, *Gaillet à trois Cornes.* German, *Dreihörniges Labkraut.*

GENUS III.—ASPERULA. *Linn.*

Calyx-limb obsolete, or of 5 very small teeth. Corolla funnel-shaped or bell-shaped, with a distinct tube; limb 4-cleft, rarely 3-cleft. Fruit didymous, of 2 globular, dry, indehiscent cocca, without any remains of the calyx-limb at the top, separating from each other when ripe.

Herbs with the habit of Galium, except that in some species the upper leaves are opposite; but the only important distinction is the presence of a corolla-tube.

The name of this genus of plants is derived from the Latin word *asper*, rough, in reference to the leaves.

SPECIES 1.—ASPERULA ODORATA. *Linn.*

PLATE DCLX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXVIII. Figs. 2, 3.
Billot, Fl. Gall. et Germ. Exsicc. No. 1493 (*bis*).

Perennial. Rootstock creeping. Stems solitary, erect, simple, glabrous, with a hairy ring below each node. Leaves 6 to 9 in a whorl, all those in each whorl equal, elliptical or oblanceolate-elliptical, sub-cuspidate, glabrous, ciliated. Flowers in 1 to 5 terminal stalked corymbose cymes, arranged in a sub-umbellate manner. Corolla bellshaped-funnelshaped, the tube about as long as the limb. Fruit thickly clothed with soft white bristles hooked and black at the apex.

In woods and shady hedge-banks. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock slender, pale-red, sending up at intervals solitary stems, and frequently stoloniferous. Stems 6 to 18 inches high, brittle, sharply quadrangular, simple or very slightly branched. Leaves firm, in rather distant whorls, the lowest ones small and usually 6 in a whorl, those in the whorls in the middle of the stem 8 or sometimes 9, and 1 to 1½ inch long. Peduncles few, long, naked, generally all terminal and umbellate, but occasionally additional ones lateral below the umbel; cymes dichotomous or trichotomous. Flowers on short pedicels, ¼ inch across, white; corolla-segments oblong, obtuse, slightly recurved. Fruit about the size of a rape-seed, blackish, but this colour completely concealed by the very numerous thick flexible bristles. Plant green, shining.

Sweet Woodruff.

French, *Aspérule Odorante.* German, *Waldmeier, Waldmeister.*

This plant is known by the names of Woodrose or Woodrowd. Gerarde calls it Woodrowe and Woodroofe: Parkinson mentions it as Woodroofe. By some of the older herbalists it is spelt curiously by the repetition of double consonants, which form a puzzle in themselves if read aright—Wooddrowffe. The pleasant haylike scent of the Woodruff has caused it to find favour in village nosegays, although it is not until it becomes dry that the perfume is exhaled with any power. Gerarde says: "When being made up into garlands or bundles and hanging up in houses in the heat of summer, it doth very well temper the aire, coole and make fresh the place, to the delight and comfort of such as are therein." He adds: "It is reported to be put into wine to make a man merry, and be good for the heart and liver; it prevaileth in wounds, as *cruciata* and other vulnerary herbes do."

SPECIES II.—ASPERULA CYNANCHICA. *Linn.*

PLATE DCLXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXXI. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 1492 (*bis*).

Perennial. Rootstock woody, not creeping. Stems generally tufted, ascending or decumbent, suffusely branched, glabrous, generally puberulent towards the base, without a hairy ring under the nodes. Leaves 4 in a whorl, those in each whorl very unequal in size—in the upper whorls so much so that the leaves appear opposite, linear or strapshaped-linear, mucronate, glabrous, not ciliated. Flowers in small corymbose cymes, disposed in a lax sub-corymbose or slender panicle. Bracts lanceolate. Corolla salvershaped-funnelshaped; limb about as long as the tube. Fruit glabrous, rugose.

On chalky banks and on limestone soil, common; rare on other soils. Extending from Devon and Kent to Westmoreland and York.

England, Ireland. Perennial. Summer and Autumn.

Stems varying much in length, from 2 or 3 inches to 1 foot or more. Largest leaves $\frac{1}{4}$ to 1 inch long, usually stiffly recurved, very firm, with a thick central nerve. Bracts small. Flowers $\frac{1}{8}$ to $\frac{1}{6}$ inch across, white, generally lilac-fleshcolour on the outside which is rough with small papillæ. Fruit small, papillose, with the papillæ sometimes confluent, so as to make the surface appear wrinkled. Plant dull-green.

Squinancy-wort.

French, *Aspérule des Sables.* German, *Hügel Meier.*

This plant is also known as the Quinsey-wort, from its supposed efficacy in that disorder. The French word *esquinancie* supplies the name in its present form. It is now fallen into disuse in medicine. Its roots yield a red dye, and are occasionally employed in Sweden.

SPECIES III.—ASPERULA TAURINA. *Linn.*

PLATE DCLXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXVIII. Fig. 1.
Billot, Fl. Gall. et Germ. Exsicc. No. 2683.

Rootstock extensively creeping. Stems solitary, erect, simple or slightly branched, glabrous or slightly pubescent, with a hairy ring under each node. Leaves 4 in a whorl, all those in each whorl nearly but not quite of equal size, ovate or ovate-lanceolate,

acuminate, sub-glabrous, with a few scattered hairs on the surface and more numerous ones on the veins, ciliated on the margins. Flowers polygamous, in a terminal head, with an involucre of about 8 leaf-like longly-ciliated bracts, in two rows, those of the outer row longer, and usually exceeding the flowers, those of the inner row bristly. Corolla tubular-funnelshaped; tube more than twice as long as the limb. Fruit glabrous, rough with small points.

In woods, pastures, and by roadsides, but only where planted or escaped from cultivation. About Cadeby and Market Bosworth, Leicestershire; in Westmoreland; near Roslin, Ebinburgh, and about Perth.

[England, Scotland.] Perennial. Spring and early Summer.

Rootstock slender, extensively creeping. Stems 6 inches to 2 feet high, the whorls of leaves few and very distant, the largest leaves in the middle of the stem, $1\frac{1}{2}$ to 2 inches long. Flowers white tinged with pale flesh-colour, scarcely $\frac{1}{4}$ inch across; corolla-tube $\frac{3}{8}$ inch long, very slender. Anthers very slender, on long filaments. Leaves of the involucre similar to those of the stem, but much smaller, ciliated, particularly those of the inner whorl, which are smaller and narrower than those of the outer. The mature fruit I have not seen.

Pink Woodruff.

French, *Aspérule à trois Nervures.*

A translation of the specific name of this plant would make it *Bull* Woodruff, which name it sometimes bears.

SPECIES IV.—ASPERULA ARVENSIS. *Linn.*

PLATE DCLXII. (*bis*).

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. MCLXXVII. Fig. 2.
Billot, Fl. Gall. et Germ. Exsicc. No. 790.

Annual. Stem somewhat dichotomously branched, ascending, glabrous or slightly hispid. Leaves 6 to 8 in a whorl, all those in a whorl nearly equal in size, linear-strapshaped, generally obtuse, subglabrous, ciliated on the margins. Flowers blue, in terminal heads, surrounded by an involucre of numerous longly-ciliated leaf-like bracts in 2 or 3 rows, those of the outer row much longer than the flowers, those of the inner row bristly-ciliated. Corolla shortly tubular-funnelshaped; tube as long as the limb. Fruit glabrous, smooth.

Cultivated ground and waste places. Apparently not persistent in its localities. Has occurred near Davenport, and in Herts and

Yorkshire. The Rev. W. W. Newbould informs me that Mr. W. W. Reeves occasionally finds it about Darenth, Kent; and that Buddle says, in his MS. Flora (Sloane MSS. 2975 *b*, fol. 15), "this was given me by Mr. Vernon as a plant growing in Yorkshire; and Merret says it grew in woods at Hampstead: but notwithstanding these authorities, I much question whether this be indigenous."

[England.] Annual. Early Summer.

Stem weak, slender, 3 to 12 inches high, branched throughout, the branches simple, ascending-spreading. Leaves ½ to 1 inch long, narrowed towards the base, in distant whorls; the persistent cotyledons opposite, obovate. Flowers ⅛ inch across, pale-blue, resembling those of Sherardia arvensis, in sessile terminal heads. Fruit large for the size of the plant, smooth. Plant light-green, subglabrous, the leaves often roughish below.

The much longer and narrower leaves will distinguish this plant at first sight from Sherardia arvensis.

Blue Field Woodruff.

French, *Aspérule des Champs.* German, *Ackermeier.*

GENUS IV.—SHERARDIA. *Linn.*

Calyx-limb of 4 to 6 acrescent teeth. Corolla salver-shaped, with a long cylindrical tube and a spreading 4-cleft limb. Stamens 4. Fruit didymous, of 2 dry indehiscent cocca, crowned by the calyx-teeth, separating from each other when ripe.

A genus containing a single species, with the habit of Galium, but differing in the funnel-shaped lilac corolla and the fruit crowned by the calyx-teeth.

This genus of plants was named by Dillenius after his patron and friend William Sherard, LL.D., consul at Smyrna. He was born at Bushby, in Leicestershire, in 1659, and died in 1728. He was a distinguished patron of science, the reputed author of "Scholæ Botanicæ," founder of the botanical professorship at Oxford, and the collector of twelve thousand species of dried plants.

SPECIES I.—SHERARDIA ARVENSIS. *Linn.*

PLATE DCLXIII.

Reich. Ic. Fl. Germ. et Helv.

Billot, Fl. Gall. et Germ. Exsicc. No. 568.

The only known species.

In cultivated ground, hedge-banks, and waste places. Common, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Annual or Biennial.
Spring to Autumn.

Stems 3 to 18 inches long, numerous, spreading in a circle, decumbent or prostrate, simple or slightly branched, glabrous or slightly hairy, with the angles rough. Lowest leaves soon decaying, opposite, or in verticels of 4, obovate, cuspidate; middle ones verticillate, in whorls of 4 or 6, elliptical-acute or acuminate; upper ones in whorls of 6, narrowly elliptical-acute and somewhat mucronate, all more or less hairy, the margins and midrib with prickles pointing towards the apex of the leaf; largest leaves $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Flowers pale bluish-lilac, $\frac{1}{8}$ inch across, sub-sessile, 4 to 8 together in an involucrate terminal head. Bracts of the involucre numerous, generally 8, resembling the leaves, but broader and more lanceolate, longer than the flowers. Corolla funnelshaped-salvershaped, with a very slender tube about twice as long as the limb. Calyx-teeth small when in flower, but becoming much more conspicuous when in fruit, erect, ciliated. Fruit about the size of fig-grains, sparingly covered with short applied bristles. Plant rather dark-green.

Blue Field Madder.

French, *Shérarde Arvensis.* German, *Acker Sherardie.*

EXCLUDED SPECIES.

GALIUM COMMUTATUM. *Jord.*

Mr. Baker informs me that the plant from Teesdale so called by him and Professor Babington, was named G. commutatum by M. Jordan; the specimens sent by Mr. Baker to me, however, are certainly not the same as those from Lyons, neither does the plant agree with M. Jordan's description.

GALIUM SACCHARATUM. *All.*

G. verrucosum, *Sm.* Eng. Bot. No. 2173.
Valantia Aparine, *Linn.* Sp. Pl. p. 1491.

Said to have been found in cornfields in the Carse of Gowrie, Forfarshire, by Mr. G. Don, and near Malton, Yorkshire, by Mr. R. Miller; but it does not appear to have been permanently naturalized in these localities.

GALIUM SPURIUM. *Linn.*

E. B. No. 1871.

Said to grow about Forfar by Mr. G. Don, but no one else has been able to find it; so it was probably an accidental straggler.

CRUCIANELLA STYLOSA. *D. C.*

On the embankment near Scarborough Railway Station, Yorkshire. Mr. J. G. Baker.

ORDER XXXIX.—VALERIANACEÆ.

Herbs, rarely undershrubs, with opposite, undivided or pinnate, exstipulate leaves. Flowers usually perfect and regular, white, red, pink, or lilac, very rarely yellow or purple, disposed in cymose corymbs or heads. Calyx-tube adnate to the ovary; limb toothed or lobed or forming a pappus which is involute in flower, but expanded in fruit. Corolla almost always monopetalous, tubular-funnelshaped, generally 5-lobed. Stamens generally 3, but from 1 to 5. Ovary generally 3-celled. Style 1, filiform. Stigmas 2 or 3, free or united. Fruit indehiscent, 1-celled and 1-seeded, or 3-celled with 2 of the cells empty, crowned by the calyx-teeth or pappus. Seed solitary, pendulous, ex-albuminous; embryo with 2 flat cotyledons.

GENUS I.—CENTRANTHUS. *D. C.*

Calyx-limb involute during flowering, afterwards spreading out into a deciduous pappus with numerous plumose rays. Corolla salver-shaped, with an obconical-cylindrical tube, spurred near the base; limb irregular, 5-lobed, with obtuse lobes. Stamen 1. Fruit 1-celled and 1-seeded, crowned by a plumose pappus.

Glabrous herbs with entire or pinnatifid or pinnate leaves. Flowers sessile, red, pink, or white, disposed in corymbose cymes often arranged in panicles, with unilateral branches, which lengthen into racemes in fruit.

The name of this genus of plants comes from κεντρον (*kentron*), a spur, and ανθος (*anthos*), a flower, in reference to the corolla being furnished with a spur at the base.

SPECIES I.—CENTRANTHUS RUBER. *D. C.*

PLATE DCLXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCXVIII. Fig. 1416.
Billot, Fl. Gall. et Germ. Exsicc. No. 3105.
Valeriana rubra, *Linn.* *Sm.* Eng. Bot. No. 1531.

Perennial. Stem somewhat shrubby at the base. Leaves on the barren shoots shortly stalked, lanceolate, entire, those at the

base of the flowering-stems lanceolate or oblanceolate, shortly stalked, entire; those on the upper part of the flowering-stem sessile or semi-amplexicaul, ovate or lanceolate-ovate, acuminate, entire or slightly toothed towards the base. Spur of the corolla longer than the ovary. Stamen exserted.

In chalk-pits, railway cuttings, and on old walls. Perfectly naturalized in the South of England, and imperfectly so in the Northern counties and a few places in Scotland.

[England, Scotland, Ireland.] Perennial. Summer and Autumn.

Stems woody only at the base, simple or branched, smooth, hollow, 1 to 3 feet high. Leaves somewhat fleshy, 2 to 4 inches long. Panicle terminal, elongated, dense, with opposite dichotomous branches; the bracts of the upper branches small, lanceolate or subulate. Flowers sessile, unilateral, and racemose, on the ultimate branches of the panicle. Calyx-limb 5-lobed. Corolla deep-red varying to white, $\frac{1}{2}$ inch long without the spur, which is much longer than the ovary; limb scarcely $\frac{1}{4}$ inch in diameter, with 5 oblong blunt lobes; the one opposite the spur distant from the others. Anther deep purple. Fruit pale-olive, roughened, $\frac{1}{4}$ inch long, oblong-cylindrical, flattened from back to face, attenuated towards the apex, with a slender rib down the back and 5 strong ones on the face, which is slightly concave, crowned at the apex with a small expanded membranous cup, on which is situated the deciduous pappus consisting of numerous plumose rays with white hairs, the rays at first rolled inwards and only expanding when the fruit is mature. Fruit glabrous.

Red Valerian.

French, *Centrante Rouge.* German, *Rothe Spornblume.*

SPECIES II.—CENTRANTHUS CALCITRAPA. *D. C.*

PLATE DCLXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCXVII. Fig. 1414.
Billot, Fl. Gall. et Germ. Exsicc. No. 1219 (*bis*).

Annual. Lower leaves spathulate-obovate, shortly stalked, sometimes entire, sometimes like the intermediate ones lyrate-pinnatifid; upper ones sessile, deeply pinnatifid or bipinnatifid. Spur of the corolla reduced to a lateral knob not reaching down even to the summit of the ovary.

On walls and in dry stony places. Naturalized on the walls of Eltham churchyard, Kent.

[England.] Annual. Early Summer.

Stem slender, finely striate, hollow, paniculately branched from the base, or in small specimens simple up to the panicle. Leaves ½ to 2 inches long, very variable in the degree of division, sometimes all pinnatifid, more generally the intermediate and lower ones lyrate-pinnatifid, lowest of all entire. Panicle at first dense, but becoming lax in fruit; branches opposite, forked. Corolla pinkish-lilac, $\frac{1}{10}$ inch long; the spur about the middle of the tube and very minute; limb $\frac{1}{10}$ inch across, with 5 narrow segments. Fruit pale-olive, nearly smooth, ¼ inch long, oblong-ovoid, flattened from back to front, attenuated towards the apex, with a very faint rib down the back, and 5 stronger ones on the face, which is concave, crowned at the apex with a small neck-like cup on which the plumose pappus is situated. Plant glabrous, pale-green.

Cut-leaved Valerian.

French, *Centrante Chausse-trappe.*

GENUS II.—VALERIANA. *Linn.*

Calyx-limb involute during flowering, afterwards spreading out into a deciduous pappus with numerous plumose rays. Corolla tubular-funnelshaped, with the tube obconic or cylindrical-obconic, equal or gibbous on one side at the base, but not spurred; limb regular, 5-cleft rarely 3-cleft, with obtuse lobes. Stamens 3. Fruit 1-celled and 1-seeded, crowned by a plumose pappus.

Herbs or under-shrubs, with the leaves entire or divided. Flowers white, pink, rarely bluish or yellow, frequently dicœcious, sessile, in heads or corymbose cymes sometimes arranged in a panicle, with unilateral branches, generally lengthening into racemes in fruit.

The derivation of the name of this genus of plants is differently given. It is said by some authors to have been named after Valerius, who first used it in medicine; while others derive the name from the word *valere*, to be in health, on account of its medicinal qualities.

SPECIES I.—VALERIANA OFFICINALIS. *Linn.*

PLATE DCLXVI.

Rootstock usually stoloniferous. Root-fibres slightly thickened, cylindrical, tapering. Stem erect, deeply striated, glabrous or pubescent towards the base. Leaves all pinnate, with 4 to 10 pair of leaflets; leaflets ovate-lanceolate or strapshaped, the terminal one not conspicuously larger than the others; lower leaves with broader leaflets than the upper ones. Flowers all perfect, in a compound corymbose cyme. Fruit glabrous.

Var. *α*, *Mikanii*.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tabs. DCXXVII. DCXXVIII. Figs. 1432, 1433.

V. officinalis, *Mik. Koch.* Syn. Fl. Germ. et Helv. ed. ii. p. 369. *Bab.* Man. Brit. Bot. ed. v. p. 163.

Billot, Fl. Gall. et Germ. Exsicc. No. 3106.

Rootstock with elongate stolons. Leaves with 6 to 10 pair of leaflets.

Var. *β*, *sambucifolia*.

Plate DCLXVI.

Reich. l. c. Tab. DCXXVI. Fig. 1431.

V. sambucifolia, *Mik. Koch*, l. c. p. 369. *Bab.* l. c. p. 163.

V. officinalis, *Sm.* Eng. Bot. No. 698.

Roostock with elongate stolons. Leaves with 4 to 6 pair of leaflets.

In marshy meadows, by the side of water, and in damp woods. Common, and generally distributed. Var. *β* the more common form.

England, Scotland, Ireland. Perennial. Summer.

Rootstock short, generally stoloniferous, the stolons sometimes above-ground resembling runners, sometimes beneath like suckers. Stem solitary in the British forms, 2 to 5 feet high, generally glabrous, but sometimes hairy in the lower part. Radical leaves and those of the stolons on long stalks, with the leaflets ovate or lanceolate-ovate; lower stem-leaves with the leaflets usually narrower and longer than the radical leaves; upper stem-leaves sessile, with the leaflets always narrower and more acute than the lower ones; leaflets $\frac{3}{4}$ to $2\frac{1}{2}$ inches long, sessile, generally serrate or dentate on the outer margin, often entire on the inner. Flowers pale flesh-colour, in corymbose cymes, of which several are usually collected at the apex of the stem so as to form a flat compound corymbose cyme, and in large examples a few additional pairs of cymes on long stalks are produced from the axils of the upper leaves. Corolla widely funnel-shaped, $\frac{1}{6}$ inch across. Stamens and styles exserted. Fruit pale-olive, lanceolate-ovoid or oblong-ovoid, compressed, with a single rib on the back, 3 on the face, and 1 down each side. Pappus plumose. Plant light-green, sub-glabrous; the leaves generally ciliated at the margins and with short hairs on the veins and scattered on the upper surface. Stem usually hairy at the nodes.

I can scarcely separate V. sambucifolia, even as a mere variety, the stolons in the forms both with the fewest and most numerous leaflets, are sometimes above and sometimes below the ground.

The leaflets of var. sambucifolia are generally broader, but they vary much; and in every other point they are precisely similar; the ripe fruit is said to be different in the "Flora of Essex;" it varies slightly in both varieties, but I can see no constant difference.

Great Wild Valerian.

French, *Valériane Officinale.* German, *Gebräuchlicher Baldrian.*

This plant has been esteemed in medicine for several centuries, and was probably first resorted to as a substitute for the Greek Valerian, the φου (*phou*) of Dioscorides. Its virtues were considered to be so great that it received the name of All-heal, which it still retains in some parts of the country. Although many of its marvellous powers are not now credited, it still retains a place in the British Pharmacopœia. The roots are collected in the wild state, being gathered in the autumn or early spring, before the stems have risen far above the ground. The peculiar odour evolved by the plant is due to the presence of a volatile acid called valerianic acid, and recognized by the chemist as being produced by several combinations. It is found in nature in the oil of the plant Valerian, also in small proportion in train oil and the oil of cetacea generally, which owe their smell to it. It is also one of the products of oxidation of animal matters and of fat oils, and is secreted in certain portions of animal bodies. Its salts are soluble, and have a sweetish taste and fatty aspect. Valerianate of oxide of ethyle, or valerianic ether, is a fragrant compound occurring in some vegetable products. Valeric or valerianic acid combines with bases to form salts, which are called *valerates* or *valerianates;* the potash and soda salts are very soluble, deliquescent, and crystallize with difficulty. Valerianate of zinc, readily prepared by double decomposition, and used to some extent in medicine, is a pearly white salt, having a faint odour of valerianic acid and a metallic astringent taste.

In medicine the English Valerian is most esteemed: it is abundant in Hampshire, formerly in Kent and Essex, and the wild plant is to be preferred to that which is cultivated, for medical use. It is to be regretted that the root is often confounded or fraudulently adulterated with that of Valeriana dioica, which is smaller, and of much feebler odour, and that of the *Geum urbanum* or Avens, which is pleasantly aromatic. Much more serious is the confusion, possibly accidental or merely from ignorance, of the genuine root with those of several species of Ranunculus; but the absence of the peculiar odour of Valerian is a sufficient test in most cases. Valerian is considered to be a *cerebro-spinal* stimulant, large doses of it causing marked excitement of the nervous system, not only of the human race, but also of cats, which are extremely fond of it. It is scarcely possible to keep a plant of Valerian in a garden which these animals frequent, after the leaves or root have been bruised or disturbed in any way, so as to evolve the odour of the herb. It is equally attractive to rats, and is often used by the destroyers of those vermin to bait their traps. Although the odour is so disagreeable to Europeans, some of the Asiatic nations prize it as a delicious perfume, and employ it in the manufacture of their most valued scents. In the slighter forms of nervous disease, not dependent on any change of structure of the brain or spinal cord, Valerian is of great utility. Valerian in powder greatly heightens the tonic power of the disulphate of quinine as a medicine. Combined with various bases, the acid furnishes compounds reputed as of great value as antispasmodics; such as valerianate of zinc, iron, &c.

SPECIES II.—VALERIANA PYRENAICA. *Linn.*

PLATE DCLXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1685.

Rootstock not stoloniferous. Root-fibres slightly thickened, cylindrical, tapering. Stem erect, deeply striated, sub-glabrous. Radical leaves on long stalks, deltoid-roundish, deeply cordate, blunt or sub-acute, coarsely toothed; lower stem-leaves resembling the radical leaves; the middle and upper stem-leaves lyrate-pinnate, with 1 (rarely 2) pair of stalked lanceolate or ovate coarsely-toothed leaflets, and a very much larger terminal deltoid-ovate leaflet sub-cordate or abrupt at the base, more deeply toothed than in the radical leaves. Flowers all perfect, in a compound corymbose cyme. Fruit glabrous.

In woods. Not native, though it is thoroughly established in several localities in the south and middle of Scotland; Collinton Woods, Edinburgh; Blair Adam, Kinross; Daldowie, Cumbernauld, and Pollok, near Glasgow. In England it has been observed at Pentre, Carnarvonshire; Cheadle, Staffordshire; and Freston, near Ipswich.

[England, Scotland.] Perennial. Summer.

Rootstock thick, without elongated stolons. Radical leaves sometimes very large, 6 to 12 inches across; stem-leaves smaller, the uppermost much smaller. Stem usually thicker and taller than in V. officinalis, frequently 4 feet high. Corymb similar to that of V. officinalis, but usually more compact; bracts narrower; stigma less deeply 3-cleft. Leaves, especially the upper ones, more hairy on the veins.

Heart-leaved Valerian.

French, *Valériane des Pyrénées.*

SPECIES III.—VALERIANA DIOICA. *Linn.*

PLATE DCLXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCXXIV. Fig. 1428.
Billot, Fl. Gall. et Germ. Exsicc. No. 379.

Rootstock stoloniferous. Root-fibres slender, cylindrical-tapering. Stem erect, finely striated, sub-glabrous. Lower leaves and those of the stolons stalked, with an oval or ovate entire lamina abruptly attenuated into the petiole, rarely sub-cordate; middle stem-leaves lyrate-pinnatifid, with 2 to 5 pairs of lateral

lobes decreasing in size towards the base, and a terminal oval or elliptical one conspicuously larger than the others; upper stem-leaves similar, but with the lobes more nearly equal in size. Flowers diœcious, the male flowers in a rather lax corymbose cyme, the female in a very compact one. Fruit glabrous.

In wet meadows and bogs. Rather scarce, but generally distributed in England and the South of Scotland, not extending North of the counties of Fife and Dumbarton.

England, Scotland. Perennial. Early Summer.

Rootstock slender, extensively creeping, and emitting numerous stolons terminating in tufts of leaves. Flowering stem curved at the base, then erect, 6 to 18 inches high, hairy at the nodes. Leaves very variable in shape, but generally the lower ones are spathulate, and the upper ones lyrate-pinnatifid. Corymb rather few-flowered, with opposite trichotomous branches, and sometimes a pair of branches below the main corymb; male flowers flesh-colour, $\frac{1}{6}$ inch across; female flowers much smaller and deeper in colour, in corymbs all collected into a terminal head. Bracts strap-shaped. Fruit scarcely $\frac{1}{8}$ inch long, lanceolate-ovoid, compressed, with a single rib on the back, 3 on the face, and 1 down each side. Pappus with the main ribs purple. Plant yellowish-green, nearly glabrous, except at the nodes and margins of the leaves, which are hairy.

Small Marsh Valerian.

French, *Valériane Dioïque.* German, *Kleiner Baldrian.*

This species of Valerian is often used to adulterate the true Valerian, but is not possessed of the same active properties.

GENUS III.—VALERIANELLA. *Tournef.*

Calyx-limb generally irregular, of 1 to 6 teeth, not spreading out into a pappus in fruit. Corolla funnel-shaped; tube not spurred at the base; limb 5-lobed with the lobes blunt. Stamens 3. Fruit 3-celled, two of the cells empty, the third with a single seed.

Annual herbs with dichotomous stems, and entire or pinnatifid leaves. Flowers in cymose bracteated heads, lilac or white.

The name of this genus of plants is simply a diminutive of Valeriana.

SPECIES I.—VALERIANELLA OLITORIA. *Mönch.*

PLATE DCLXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCVIII. Fig. 1398.
Billot, Fl. Gall. et Germ. Exsicc. No. 251.
Fedia olitoria, *Vahl. Hook. & Arn.* Brit. Fl. ed. viii. p. 201.
Valeriana Locusta, *Linn. Sm.* Eng. Bot. No. 811.

Stems fragile, dichotomous from below the middle. Leaves strapshaped-oblong or oblanceolate-oblong, blunt, entire or very faintly toothed. Flowers all in crowded head-like corymbose cymes. Fruit sub-globular, laterally compressed, the fertile cell with a prominent mass of spongy tissue on the back; the two barren cells contiguous, distinct or confluent, collectively larger than the fertile cell, with a faint furrow on the face between them and another bounded by two slightly elevated ribs between them and the corky tissue, which covers the fertile cell. Calyx-limb obsolete in fruit.

In hedge-banks, cultivated ground, and on old walls. Common, and generally distributed.

England, Scotland, Ireland. Biennial. Spring and early Summer.

Stems succulent, $\frac{1}{2}$ to 18 inches long, generally dichotomous from the very base, or at least within the lowest quarter of their length; branches divaricate. Radical leaves oblanceolate, indistinctly stalked, 1 to 3 inches long, generally decaying early; stem-leaves sessile, semi-amplexicaul, almost connate. Bracts spreading, oblanceolate-strapshaped, the inner ones strapshaped, scarious and rounded at the apex, ciliated. Flowers very small, bluish-lilac or nearly white. Fruit about as large as a grain of sago, pale-olive, slightly roughened, glabrous or more rarely slightly hairy. Plant pale yellowish-green, flaccid, somewhat shining.

The form with the fruit hairy I have gathered only near Blackness Castle, Linlithgowshire.

Common Lamb's-Lettuce.

French, *Mâche Commune.* German, *Gemeines Rapünzchen.*

This plant was formerly classed with the Lettuces, and called *Lactuca agnina*, "from appearing about the time when lambs are dropped." According to other writers, it is a favourite food of lambs. The young leaves in spring and autumn are eaten as a salad, and are very excellent. A small portion of garden earth sown with the seeds in August will supply an excellent portion of this salad throughout the winter: it is commonly known as corn salad. Gerarde tells us that foreigners using it while in England led to its cultivation in our gardens. It has long been a favourite salad-plant in France under the names of *mâche*, *doucette*, and *salade de chanoine*. We may learn much from our continental neighbours in their appropriation of all natural productions of this sort to the purpose of contributing variety to their diet.

SPECIES II.—VALERIANELLA CARINATA. *Lois.*

PLATE DCLXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCVIII. Fig. 1399.
Billot, Fl. Gall. et Germ. Exsicc. No. 252 *bis*.
Fedia carinata, *Stev.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 201.

Stems fragile, dichotomous from below the middle. Leaves strapshaped-oblong or oblanceolate-oblong, blunt, entire, or the upper ones very faintly toothed. Flowers all in crowded head-like corymbose cymes. Fruit oblong-ovoid, boat-shaped, scarcely compressed; the fertile cell without any spongy tissue on the back; the 2 barren cells contiguous, distinct, collectively larger than the fertile cell, deeply excavated on the face by a very broad and deep furrow, and separated from the fertile cell by a deep rather narrow furrow. Calyx-segments obsolete in fruit.

In hedge-banks, cultivated ground, and on old walls, &c. Rare, and perhaps doubtfully native. It has occurred in Devon, Kent, Surrey, Middlesex, Somerset, Essex, Shropshire, Derbyshire, and Yorkshire. Common in the Channel Islands.

England. Annual. Spring and early Summer.

V. carinata is so extremely like V. olitoria, that they can only be certainly distinguished by the fruit. That of V. carinata is smaller, and there is not the prominent hump on the back which the corky tissue produces in V. olitoria; in V. carinata also the edges of the fertile cell project laterally beyond those of the barren cells, and the anterior edges of the latter are curved inwards so as to leave a boat-shaped hollow between them. The bracts are usually longer. The fruit, as in the last, is generally glabrous, but sometimes finely hairy.

Carinated Lamb's-Lettuce.

French, *Mâche en Nacelle.* German, *Gekieltes Rapünzchen.*

SPECIES III.—VALERIANELLA AURICULA. *D. C.*

PLATE DCLXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCIX. Fig. 1400, and Tab. DCCXI. Fig. 1405.
Billot, Fl. Gall. et Germ. Exsicc. No. 2483.
V. Auricula et dentata, *D. C.* Prod. Vol. IV. p. 627.
V. tridentata. *Reich.* Fl. Germ. Excurs. p. 198.
Fedia Auricula, *Gaud.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 201.

Stem slender, rather firm, dichotomous usually only from above the middle. Lower leaves oblanceolate-strapshaped, obtuse, entire;

upper ones narrowly lanceolate-acute, generally toothed at the base. Flowers not crowded, in small corymbose cymes, and also solitary in most of the forks of the stem. Fruit ovate-globular, not compressed, acuminate; the fertile cell convex on the back, but without spongy tissue; the barren cells collectively larger than the fertile cell, inflated, contiguous, separated from each other by a partition which is indicated by a very narrow shallow furrow on the face, and from the fertile cell by a very faint furrow. Calyx-limb accrescent in fruit, oblique, with a single large entire or tridentate tooth over the fertile cell, and a few very minute ones over the barren cells.

In cultivated fields. Apparently rare, though generally distributed in England, in Scotland only known to occur in Fife; but from its great resemblance to the following species, it is probably often passed over.

England, Scotland, Ireland. Annual. Summer and Autumn.

Stem slender, not succulent nor extremely brittle, 6 to 18 inches high, repeatedly dichotomously branched; the branches almost always commencing above the middle. Flower-heads smaller and much less dense than in the two preceding species; the flowers about the same size, but pale-lilac, without any tinge of blue. Fruit rather smaller than that of V. olitoria, but broader at the base, attenuated towards the apex, and crowned by the accrescent calyx-limb, which is somewhat the shape of a coal-scuttle. The fertile cell is broad below, tapering above, with a faint rib down the back, and separated from the inflated barren cells by an indistinct furrow. The fruit is glabrous, or more rarely pubescent, as in the preceding species.

I have found the fruits with the large calyx-tooth simple or tridentate on the same plants (Castle Taylor, Galway, Mr. A. G. More), so that the V. dentata (D. C.) cannot be separated, even as a variety, from V. Auricula; and De Candolle himself surmises that the two are perhaps not sufficiently distinct. The late Dr. Bromfield, in "Flora Vectensis," apparently not aware that the V. dentata of British botanists is V. Morisonii of De Candolle, quotes this opinion as a confirmation of his own that V. Auricula and V. dentata, *Auct. Ang.*, were probably the same species, which is certainly not the case.

Sharp-fruited Lamb's-Lettuce.

French, *Mâche Oriellette.* German, *Geöhrtes Rapünzchen.*

SPECIES IV.—VALERIANELLA DENTATA. *Koch.*

PLATE DCLXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCX. Figs. 1402, 1403.
Billot, Fl. Gall. et Germ. Exsicc. No. 253 *bis, ter.*
V. Morisonii et V. mixta (*Duf.*), *D. C.* Prod. Vol. IV. p. 627.
V. Morisonii, *Gr. & Godr.* Fl. de Fr. p. 63.
Fedia dentata, *Vahl.? Hook. & Arn.* Brit. Fl. ed. viii. p. 202.
Valeriana dentata, *Ehrh. Sm.* Eng. Bot. No. 1370.

Stem slender, rather firm, dichotomous usually only from above the middle. Leaves oblanceolate-strapshaped, obtuse, entire, the upper ones narrowly lanceolate-acute, generally toothed at the base. Flowers not crowded, in small corymbose cymes, and also solitary in most of the forks of the stem. Fruit ovate-lanceolate, ovoid, not laterally compressed, acuminate, the fertile cell convex on the back, but without spongy tissue and reticulating veins: the barren cells not contiguous, reduced to small curved tubes on the face of the seed, which appear as two elevated ribs enclosing a lyre-shaped space.

Calyx-limb accrescent in fruit, opaque, not netted-veined, much shorter and narrower than the fruit, oblique, with a single large tridentate or entire acute tooth over the fertile cell, and a few very minute ones over the barren cells.

In cultivated fields. Common, and generally distributed, extending as far North as the counties of Moray, Forfar, and Lanark.

England, Scotland, Ireland. Annual. Summer and Autumn.

Very like V. Auricula, but usually taller, the stem 9 inches to a foot high. The flowers are of the same very pale-lilac, without any blue tint; but the fruit is very different, as the barren cells are reduced to curved filiform tubes, and not parallel contiguous and inflated, as in V. Auricula. The size and dentition of the calyx-limb is very variable, but the length rarely exceeds half that of the mature fruit. The hispid-fruited form, V. mixta (Duf.), is common, and has been repeatedly mistaken for V. eriocarpa.

Narrow-fruited Lamb's-Lettuce.

French, *Mâche de Morison.* German, *Gezähntes Rapünzchen.*

SPECIES V.—VALERIANELLA ERIOCARPA. *Desv.*

PLATE DCLXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCXII. Fig. 1408.
Billot, Fl. Gall. et Germ. Exsicc. No. 380 *bis*.
Fedia eriocarpa, *Reich.* Ic. Pl. Crit. Vol. I. Tab. 65.

Stem rather stout, firm, dichotomous usually from below or about the middle. Leaves oblanceolate-strapshaped, entire, the upper ones strapshaped-lanceolate, often with 1 or 2 small teeth at the base. Flowers rather crowded, in small corymbose cymes, and generally also solitary in most of the upper forks of the stem. Fruit oval-ovoid, not laterally compressed, scarcely acuminate; the fertile cell convex and reticulated on the back, but without spongy tissue; the barren cells not contiguous, reduced to small curved tubes, which appear on the face of the seed as two elevated ribs enclosing an oval space. Calyx-limb accrescent in fruit, nearly as long and as broad as the fruit, semi-transparent, netted with opaque veins, nearly as long as the fruit, very slightly oblique, denticulate all round, with the largest tooth over the fertile cell.

In cultivated ground, &c. Very rare, and perhaps only accidentally introduced in Britain. I have a specimen from between Henley Castle and Barnard Green, Worcestershire, collected by Mr. E. Lees. That gentleman informs me he gathered it by the roadside, where it was plentiful in 1845; but he has not visited the locality lately.

England? Annual. Summer.

Very like V. dentata, but the stems are shorter, commonly under 1 foot high, much stouter, and with the branches thicker upwards, and diverging at a greater angle; the leaves less pointed and less frequently toothed at the base; the branches of the cyme elongating much more after flowering, so that the flowers assume a distinctly racemose appearance, which, though it exists, is not conspicuous in the other British species. The fruit is like that of V. dentata, and has the same arrangement of barren cells, but these converge less towards the top; the calyx-limb is much larger and distinctly reticulated. The fruit is more commonly pubescent than glabrous.

Hairy-fruited Lamb's-Lettuce.

French, *Mâche à Fruit Velu.* German, *Borstiges Rapünzchen.*

ORDER XL.—DIPSACEÆ.

Herbs or under-shrubs with opposite (or rarely whorled) leaves, undivided or pinnately divided, without distinct stipules. Flowers perfect, irregular or nearly regular, purple, lilac, ochreous, or variegated, sessile in a head (*anthode*), on a floret-receptacle (*clinanth*), surrounded by an involucre (*pericline*) of bracts (*phyllaries*); rarely pseudo-verticillate; each separate flower usually inclosed in a tubular monophyllous involucel. Calyx-tube more or less adhering to the ovary, and contracted at the top above it; limb often persistent or accrescent, generally cupuliform, entire, lobed, or divided into awned segments. Corolla monopetalous, tubular-funnelshaped or salver-shaped, with the limb often sub-bilabiate or rarely bilabiate. Stamens 4, free, rarely diadelphous. Ovary 1-celled, 1-ovuled; style filiform; stigma entire or bilobed. Fruit surmounted by the persistent part of the calyx-limb, dry, indehiscent, 1-celled, 1-seeded, inclosed in the persistent involucel. Seed suspended, adhering to the pericarp; embryo straight, inclosed in fleshy albumen.

GENUS I.—DIPSACUS. *Linn.*

Pericline of numerous herbaceous generally spiny phyllaries. Clinanth clothed with scales acuminated into spinous points. Involucel sessile, tetragonous, 8-ribbed, terminated by 4 very short teeth. Calyx-limb cupshaped, quadrate or 4-lobed. Corolla funnel-shaped or salver-shaped, 4-cleft. Stamens 4, free. Fruit crowned by the 4-sided calyx-limb, and inclosed in the involucel.

Biennial herbs, prickly or hairy. Leaves opposite, often connate, toothed or cut. Flowers in ovoid or globose terminal heads or anthodes, lilac or whitish.

The name of this genus of plants comes from the Greek word διψακος (*dipsakos*), derived from διψαω (*dipsao*), I thirst, because the leaves, from their hollow shape, hold water to satisfy thirst.

SPECIES I.—DIPSACUS SYLVESTRIS. *Linn.*

PLATE DCLXXIV.

Reich, Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCVII. Fig. 1397.
Billot, Fl. Gall. et Germ. Exsicc. No. 2860.

Stem prickly. Root-leaves oblanceolate-elliptical, indistinctly stalked, with scattered prickles with tubercular bases, crenate;

stem-leaves narrowly lanceolate, connate at the base, spinous only on the midrib beneath, crenate and generally ciliated, or the uppermost ones entire at the margins. Anthodes ovoid, always erect, with a pericline of numerous linear herbaceous prickly ascending leaves, longer than the flowers, and often exceeding the heads. Scales on the clinanth oblong, acuminated into a hairy subulate straight point, longer than the flowers.

Waste places, roadsides, and ditches. Common in chalky and limestone districts, though not confined to them. Generally distributed in England. In Scotland not native North of Fifeshire, though occasionally to be found as far North as Forfar and Moray.

England, Scotland, Ireland. Biennial. Late Summer and Autumn.

Radical leaves lying flat on the ground, produced only the first year, and decaying soon after the flowering stem appears in the following spring. Stem stout, furrowed, 2 to 5 feet high, branched in the upper part. Stem-leaves united at the base, forming a cup in which rain-water collects. Flower-heads $1\frac{1}{2}$ to 3 inches long, beginning to flower in the middle. Clinanth cylindrical, tapering, thickly clothed with coriaceous scales $\frac{1}{2}$ to 1 inch long; base of the scales broad, folded, hairy, the point firm, ending in a soft spine ciliated with long hairs, as well as clothed with short ones. Involucel pubescent, applied to the calyx, with a 4-sided tube; limb obsolete. Calyx with a slender tube and a dilated 4-cornered pubescent caducous limb. Corolla pale-purple, tubular-funnelshaped, 4-cleft, with the lobes unequal. Stamens much exserted. Fruit inclosed in the oblong prismatic-tetragonal finely-downy involucel, with 8 ribs, crowned at first by the very hairy calyx-limb. Plant light-green, glabrous.

Wild Teasel.

French, *Cardère Sauvage.* German, *Wilde Karde.*

This species affords a fine example of what are termed connate leaves. The reservoirs formed by the united leaves collect the rain so that sometimes half a pint or more may be found there, and this supply enables the plant to endure long droughts. There was an old notion that this water cured warts on the hands, and served as beauty-wash for the face; so that Ray thus accounts for its name *Labrum Veneris.*

Gerarde refers to an old superstition that the little worms or maggots found in the heads of Teasels, if worn around the neck of a sick person, will act as a charm, and restore him to health. He says: "These things are nothing else but most vaine and trifling stories, as myself have proved a little before the impression hereof, having a most grievous ague and of long continuance; notwithstanding physicke charms, these worms hanged about my neck, spiders put into a walnut shell, and divers such foolish stories, that I was constrained to take by fantasticke peoples procurement, notwith-

standing, I say, my helpe came from God himself, for these medicines and all other such things did me no good at all." We can but admire the genuine confession of the good man, after having tried the remedies in his own person. Had he tested more of such prescriptions, we should have been without a large portion of his herbal, we imagine.

SPECIES II.—DIPSACUS FULLONUM. *Mill.*

PLATE DCLXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCV. Fig. 1395.
D. sylvestris, var. *Benth.*, Handb. Br. Fl. p. 283.

Stem prickly. Root-leaves oblanceolate-elliptical, indistinctly stalked, crenate, with scattered prickles with tubercular bases; stem-leaves narrowly lanceolate, connate at the base, without spines, or with only a few scattered ones on the midrib beneath, entire, glabrous or ciliated on the margins. Anthodes shortly ovoid, always erect, with a pericline of numerous linear-lanceolate herbaceous unarmed spreading leaves, not exceeding the flowers, and always shorter than the anthodes. Scales on the clinanth oblong, acuminated into a slightly hairy subulate recurved point, as long as the flowers.

On waste places and borders of fields in the West of England, but only where it has escaped from cultivation.

England. Biennial. Late Summer and Autumn.

This plant is extremely like D. sylvestris, the chief points of difference being the shorter leaves of the involucre, which are spreading or slightly recurved at the apex, not curving upwards, and the shorter and more recurved scales of the clinanth. The calyx-limb is also more deeply lobed.

Cultivated Teasel.

French, *Cardère cultivée.* German, *Weber Karde.*

The Teasel, in its wild form, would appear to be about the most unlikely plant to render any service to man, yet the water which collects in the cup-like hollows of its leaves was at one time considered to be a remedy for bad eyesight. It was called by some of the old herbalists Venus's bath. The Teasel is an instance of the adaptation of a natural production to the artificial wants of man, in its original state. The object for which it is employed cannot be effected by the most carefully-contrived machinery; and after numerous inventions and attempts to supersede it, none have succeeded so well as the natural Teasel. The purpose for which it is so valuable is the dressing of woollen cloth, the nap of which is raised by means of the prickly heads of this plant, the bracts of which are furnished with little recurved instead of straight prickles. Probably the common Teasel with the straight prickles was at first used, and accidentally a variety with recurved spines was found to answer the purpose better, and it was carefully preserved and cultivated. The fine-hooked heads of the Teasel are found to raise the fibres of the cloth better than any contrivance that has been attempted. The fine hooks of the plant easily break and give way in any obstruction without tearing or injuring

the cloth ; any artificial contrivance of wire or bristles is stronger and less elastic, and more liable to injure the fabric. At one time wire machines were very generally used, and the Teasel plant ceased to be cultivated in Britain ; they were, however, found not to succeed, and were soon thrown aside in favour of the original Teasel. The heads of the Teasel were at first set into a frame, so as to form a comb or brush with which to manipulate ; but an improvement has been adopted by means of fixing the heads to a cylinder, which revolves and performs the necessary operation more rapidly and perfectly. Large quantities of Teasels are grown in Somersetshire and near Bristol, for the purposes of the cloth manufacturer. An acre will produce about 160 bushels, worth about one shilling each. The use of the Teasel in the manufacture of cloth seems to have been introduced by some foreign artisans who settled in this country. Without this plant our cloth manufactory could hardly have made any progress. It has been cultivated for this purpose ever since the reign of Richard I., and since the time of Edward III. has been a regular article of consumption in cloth-manufacturing districts. It is a singular instance of the failure of mechanical invention and progress of intelligence to supersede an ancient and apparently rude contrivance. The growth and cultivation of the Teasel demands constant attention and labour throughout the year. The heads are cut from the plant with a knife peculiarly formed, and the hands protected with gloves. They are very carefully dried, and great trouble is taken to prevent their being wetted by a shower after being cut. The large heads which ripen first are the most valuable, and are called kings ; these are tied up and dried separately. The next crop consists of middlings, which are smaller, and are also called princes ; these are best adapted for the dressing of fine and delicate cloths. So great is the trouble and risk involved in the cultivation of Teasels, that it is seldom undertaken by any but labourers and small farmers. It is always regarded as a casualty crop, the market price varying from £4 to £22 per pack : a pack contains about 9,000 of the largest heads, or 16,000 of the smallest.

Dr. Prior tells us that the name Teasel really signifies *to tease*, and is applied metaphorically to the scratching or teasing of cloth.

SPECIES III.—**DIPSACUS PILOSUS.** *Linn.*

PLATE DCLXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCCIV. Fig. 1393.
Billot, Fl. Gall. et Germ. Exsicc. No. 1495.
Cephalaria pilosa, *Gr.* & *Godr.* Fl. de Fr. Vol. II. p. 69.

Stem with weak prickles. Radical leaves on long stalks, ovate, acuminate, crenate-serrate, hairy ; stem-leaves oval or elliptical, attenuated at both ends, the lower ones shortly stalked, crenate-serrate, rarely entire, sometimes with a few short indistinct prickles on the midrib beneath, generally with a pair of small lobes on the petiole. Anthodes globular, slightly drooping when the flowers are expanded, afterwards erect. Pericline of narrowly triangular spinous-pointed herbaceous downy slightly-prickly leaves, ciliated with long hairs on the margins and midrib, spreading or slightly reflexed. Scales on the clinanth shortly obovate, abruptly acuminated into a trian-

gular-subulate straight point ciliated with long white hairs, as long as the flowers.

In damp places, by the sides of roads and ditches; partial to chalk and limestone districts, but not confined to them, and pretty generally though rather sparingly distributed over England, as far North as the counties of York, Chester, Flint, and Denbigh; absent from several of the western counties.

England. Biennial. Late Summer and Autumn.

Root-leaves very large, often a foot or more long. Flowering stem 2 to 4 feet high, rather slender, much branched, with the prickles much smaller than in the preceding species, and terminating in long pellucid bristles, most numerous towards the base of the stem, where the prickle-like base is nearly obsolete. Stem-leaves more narrowed at the base than the root-leaves, sometimes simple, but more commonly, especially the upper ones, with a pair of segments at the base of the lamina and united with it. Flower-heads $\frac{3}{4}$ to 1 inch in diameter. Involucel hairy, at length glabrous, with the limb very small, with numerous minute teeth. Calyx much contracted under the limb, which is 4-cornered, hairy, and ciliated. Corolla funnelshaped-salvershaped, white, the limb 4-partite, the lobes nearly equal. Stamens much exserted. Fruit oblong ovoid, inclosed in the 4-sided 8-ribbed involucel, and surmounted by the deciduous very hairy calyx-limb. Plant green, sparingly hairy.

Small Teasel.

GENUS II.—SCABIOSA. *Linn.*

Pericline of numerous foliaceous phyllaries. Clinanth clothed with hairs or small soft scales not terminating in spines. Involucel sessile or shortly stipitate. Calyx-limb a cupshaped border with 4, 5, or more teeth or bristles. Corolla salver-shaped, often irregular and radiant, 4- or 5-lobed. Fruit crowned by the calyx-limb, which has the bristles accrescent.

Soft herbs or under-shrubs without prickles, with flowers in globose or flattened heads or anthodes, lilac, purple, red, yellow, or ochreous.

The name of this genus is said by some authors to come from the Latin word *scabies*, an eruptive disease which certain species were supposed to cure. Dr. Prior tells us that it is derived from *scabiosa*, scurvy, from *scabies*, scurf, in allusion to the scaly pappus of its seeds, which, on the doctrine of signatures, led to its use in leprous diseases, and its being regarded as a specific remedy for all such as were "raüdig" or "grindig," itchy or mangy.

Sub-Genus I.—SUCCISA. *Mert. & Koch.*

Clinanth with soft scales and surrounded by a polyphyllous pericline. Involucel with 8 furrows; limb with 4 herbaceous teeth. Calyx-limb with 5 setaceous sub-erect teeth or entire. Corolla-limb 4-cleft, not radiant.

SPECIES I.—SCABIOSA SUCCISA. *Linn.*

Plate DCLXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCXCVIII. Fig. 1385.

Billot, Fl. Gall. et Germ. Exsicc. No. 1222.

Succisa pratensis, *Mönch. Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 377. *Reich.* Fl. Germ. Excurs. p. 196, et Ic. *l. c.*

Rootstock premorse. Leaves oblanceolate or obovate, shortly stalked, the stem ones narrower, with the petioles connate at the base, all entire or faintly toothed. Anthodes not radiant, hemispherical-globose. Leaves of the involucre (*pericline*) in several rows, lanceolate-strapshaped or lanceolate. Limb of the involucel 4-toothed, ciliated, the teeth ovate-acute mucronate. Calyx-teeth erect, shorter than the tube when in fruit. Corolla-limb 4-cleft, with the lobes nearly equal in all the flowers.

In pastures, moors, open places in woods, and on alpine rocks. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock very short, with numerous slightly-thickened cylindrical tapering fibres. Stems 1 to 3 feet high, stout, indistinctly striate, sparingly branched. Root-leaves 2 inches to 1 foot long, subcoriaceous, varying from obovate to narrowly elliptical, attenuated at the base into a longer or shorter stalk, the margins generally entire. Stem-leaves in distant pairs, generally narrower than the root-leaves, and more frequently toothed; the petioles united at the base, forming a short sheath. Flower-heads $\frac{5}{8}$ to 1 inch across. Phyllaries generally in three rows, herbaceous, downy, ciliated. Scales on the clinanth elliptical, sub-scarious, purple on the tips, as long as the involucels, the latter densely pubescent with white hairs. Calyx-teeth dark-red. Flowers $\frac{1}{6}$ inch across, dark purplish-blue, varying to white. Lobes of the corolla hairy. Anthers much exserted, reddish-purple. Plant rather dark-green, with scattered hairs; peduncles with close adpressed hairs. On alpine rocks, the leaves are sometimes entirely glabrous, and the whole plant much larger than usual.

Devil's-bit Scabious.

French, *Scabieuse succise.* German, *Teufels Abbiss.*

"This plant is so named," says an old writer, "because, with this root the Devil practised such power, that the Mother of God, out of compassion, took from the Devil the means to do so with it any more; and in the great vexation that he had, that the power was gone from him, he bit it off, so that it grows no more to this day." Later writers explain the peculiar bitten-off appearance of the plant, by the supposition that the medicinal and healing powers it possesses are so distasteful to the Father of Evil, that he in spite bites off the end of the plant. "Unhappily," says Sir J. E. Smith, "this malice has been so successful, that no virtues can now be found in the remainder of the root or herb." It is, however, very astringent, and its use has been suggested as a tanning material. On the continent it has been used as a green and yellow dye.

Sub-Genus II.—ASTEROCEPHALUS. *Reich.*

Clinanth with soft scales, and surrounded by a polyphyllous pericline. Involucel with 8 furrows; limb scarious, cupshaped or funnel-shaped, minutely toothed and plaited. Calyx-limb terminating in 5 long setaceous spreading bristles. Corolla 5-cleft, radiant.

Species II.—SCABIOSA COLUMBARIA. *Linn.*

Plate DCLXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCXCIII. Fig. 1378.
Billot, Fl. Gall. et Germ. Exsicc. No. 254.
Asterocephalus columbarius, *Reich.* Fl. Germ. Excurs. p. 195, et Ic. *l. c.*

Rootstock perennial, not premorse. Leaves oblanceolate or obovate, the radical ones shortly stalked, undivided and crenate or sublyrate-pinnatifid or bipinnatifid; stem-leaves generally deeply pinnatifid, the upper ones with strapshaped or linear-strapshaped segments. Anthodes radiant, convex in flower, globular or globular-ovoid in fruit. Leaves of the involucre (*pericline*) strapshaped, in a single row. Limb of the involucel membranous, spreading, half as long as the fruit. Calyx-teeth spreading, as long as or slightly longer than the tube when in fruit, persistent. Corolla-limb 5-lobed, with the lobes unequal, especially in the exterior flowers which are conspicuously radiant.

On dry banks and pastures, and local. Common on chalky soils, and pretty generally distributed in the South and East of England. Rare in Scotland, where it occurs in Berwickshire, Haddingtonshire, and Forfarshire.

England, Scotland. Perennial. Late Summer and Autumn.

Rootstock woody. Stem 6 inches to 2 feet high, branched usually from about the middle or below it, slender, round, sparingly hairy. Leaves very variable, 2 to 6 inches long, downy or glabrous; stem-leaves almost always divided into slender segments. Peduncles very long and slender. Flower-heads $\frac{3}{4}$ to $1\frac{1}{2}$ inch across. Flowers bluish-lilac, more rarely lilac; the exterior corollas very irregular, with the three lower segments enlarged, the interior ones more nearly regular, all pubescent on the outside. Involucel sub-cylindrical, enlarged upwards, $\frac{1}{10}$ inch long, with 8 very deep furrows separated by hairy ridges; limb semi-transparent, white. Calyx-teeth in fruit setaceous, rough with small points directed upwards, very dark-purple.

M. Jordan divides this plant into a number of species, which, even with the aid of authenticated specimens, I am unable to separate from each other.

Small Scabious.

French, *Scabieuse Colombaire.* German, *Tauben-Skabiose.*

Sub-Genus III.—KNAUTIA. *Coult.*

Clinanth without scales, but thickly clothed with hairs, and surrounded by a polyphyllous pericline. Involucel substipitate, with 4 very broad shallow furrows; limb with 4 herbaceous teeth. Calyx-limb with 8 to 16 setaceous sub-erect teeth. Corolla-limb 4- or 5-cleft, radiant.

Species III.—**SCABIOSA ARVENSIS.** *Linn.*

Plate DCLXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XII. Tab. DCLXXX. Fig. 1353.
Billot, Fl. Gall. et Germ. Exsicc. No. 2486.
Knautia arvensis, *Coult.* Dips. p. 29, et *Auct. Plur.*

Rootstock perennial, not premorse. Leaves oblanceolate, the radical ones shortly stalked, undivided and entire or crenate pinnatifid; stem-leaves generally deeply pinnatifid, the uppermost ones mostly strapshaped and entire. Anthodes radiant, convex in flower and fruit. Leaves of the involucre (*pericline*) ovate or lanceolate-ovate, in 2 rows. Limb of the involucel herbaceous, of 4 very indistinct teeth. Calyx-teeth erect, rather shorter than the tube when in fruit, deciduous. Corolla-limb 4-lobed, with the lobes unequal, especially in the exterior flowers which are conspicuously radiant.

On dry banks and borders of fields, and in waste places. Common, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Very like S. columbaria, but a much stouter plant, usually with longer and stiffer hairs. Stems 1 to 3 feet high, simple or branched. Peduncles generally shorter and stouter than in S. columbaria, and the upper leaves less finely divided. The flower-heads are larger and flatter, especially in fruit; the leaves of the involucre broader and in 2 rows. The 4-cleft corolla and the receptacle densely clothed with stiff white hairs, instead of long linear concave scales, and the fruit inclosed in a bluntly 4-ribbed involucel and with the calyx-teeth deciduous, are less obvious but more important characters by which it may always be known from S. columbaria. Flowers pale-lilac.

The leaves are sometimes all undivided and entire or faintly crenate.

Field Scabious.

French, *Scabieuse des Champs.* German, *Acker-Knautia.*

ERRATA IN VOL. IV.

Page 17 line 5, *for* Lamyii *read* Lamyi.
„ 57 „ 34, „ sepangulare *read* septangulare.
„ 70 „ 6, „ DXLVI. DXLVII. *read* DXLVII. DXLVIII.
„ „ „ 18, „ DXLVI. *read* DXLVII.
„ „ „ 25, „ DXLVII. *read* DXLVIII.
„ 71 „ 32, „ DXLVIII. *read* DXLIX.
„ 81 „ 18, „ dele *Don.*
„ „ „ 26, „ DLVIII. *read* DLIX.
„ „ „ 27, *after* hirta *insert Don.*
„ „ „ 31, *for* DLIX. *read* DLX.
„ 82 „ 2, „ DLX. *read* DLVIII.
„ 89 last line „ Aralliaceæ *read* Araliaceæ.
„ 92 line 29, *after* EUROPÆA insert *Linn.*
„ 100 „ 12, for *Koch* read *Bab.*
„ „ „ 16, *transpose* Apium, &c. *to after* line 25.
„ „ „ 25, and before line 26, *insert* H. nodiflorum, *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 312.
„ „ „ 33, *for* longepedunculatum *read* longipedunculatum.
„ 102 „ 17, „ nodiflorum *read* inundatum.
„ 145 „ 4, *after* SYLVESTRIS read *Linn.*
„ 148 „ 12, „ OFFICINALE read *Linn.*
„ 149 „ 17, for *Mönck* read *Mönch.*
„ 157 „ 14, and before line 15, *insert* Plate DCXVI.
„ 162 „ 29, *after* INFESTA insert *Spreng.*
„ 164 „ 28, and before line 29, *insert* Tordylium nodosum, *Linn.* Sp. Pl. p. 346.
„ 166 & 167, *transpose* remarks in small type on CHÆROPHYLLUM ANTHRISCUS and CHÆROPHYLLUM SATIVUM.
„ 166 line 14, *for* Anthriscus *read* Cerefolium.
„ 168 „ 4, *after* SYLVESTRIS insert *Hoffm.*
„ 206 „ 35, *before* coloured *insert* partially.
„ 215 „ 34, and before line 35, *insert* G. erectum var. aristatum.—*Bab.* Man. Brit. Bot. ed. v. p. 161.

On Plate DXXIX. *for* eu album *read* teretifolium.

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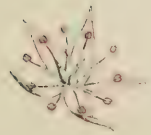

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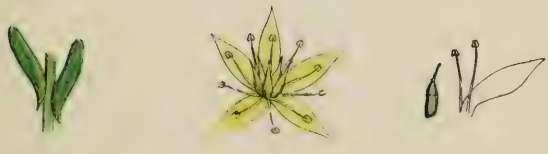

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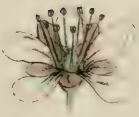

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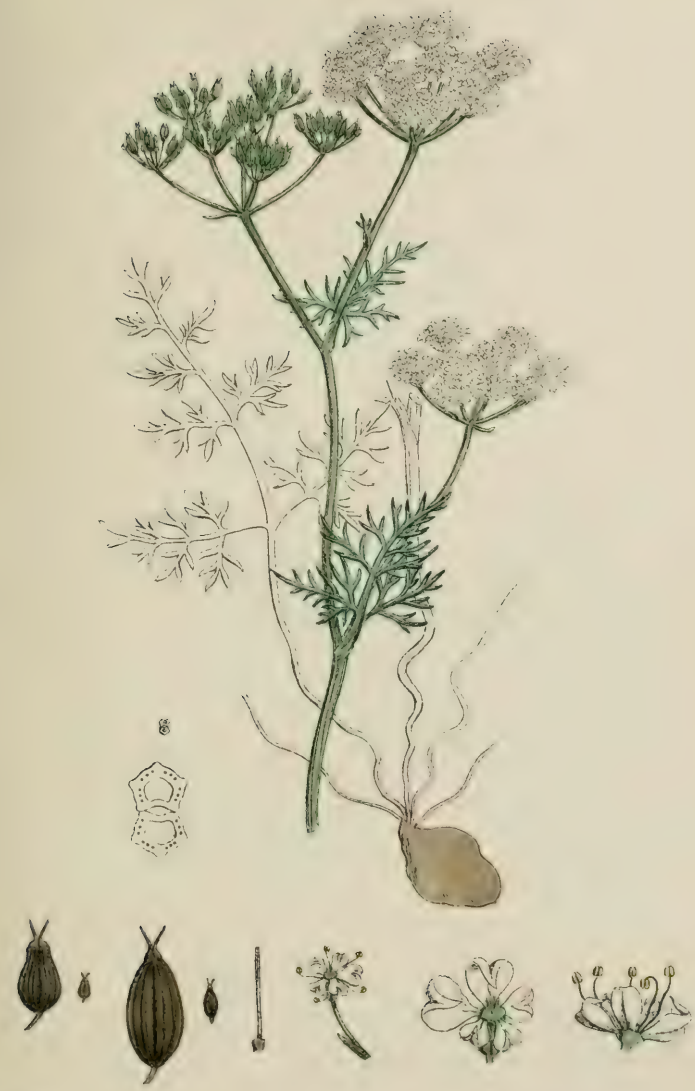

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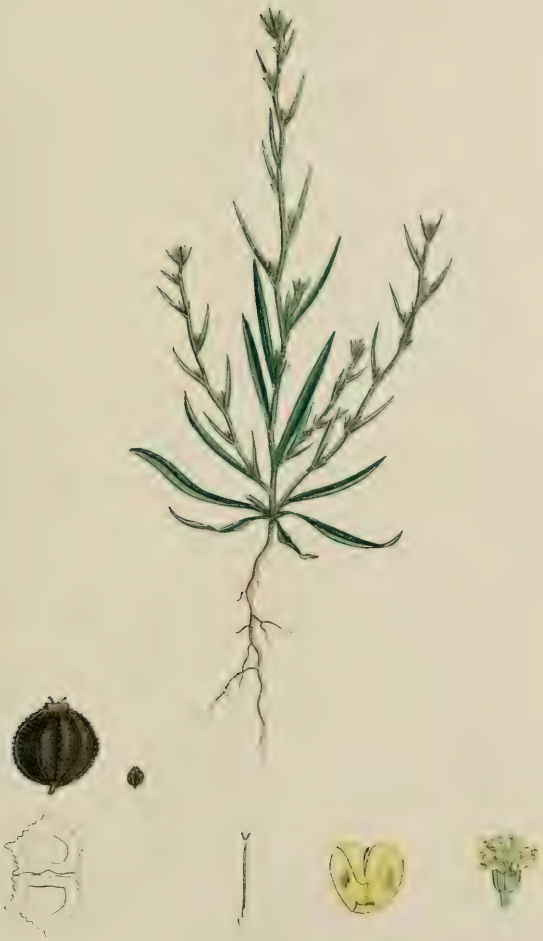

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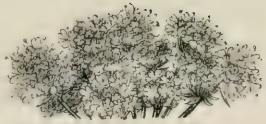

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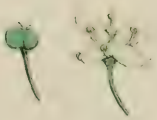

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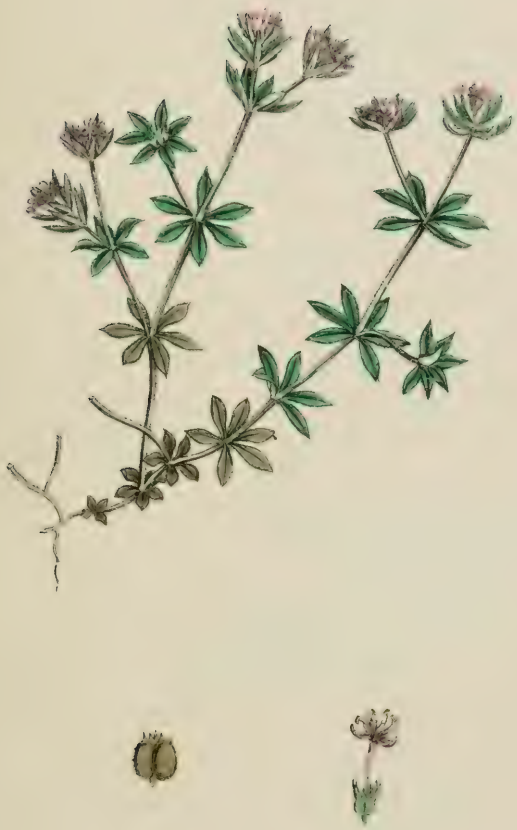

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